Marine Review

The National Publication Covering the Business of Transportation by Water

CLEVELAND FOUNDED 1878 NEW YORK

Published monthly by
The Penton Publishing Co.
Cleveland, Ohio, U. S. A.

Cleveland Office, Penton Bldg.
A. H. Jansson, *Editor*
H. O. Taylor, *Advertising Manager*

Chicago Office, 1347 Peoples Gas Bldg.
L. C. Pelott
Fred B. Pletcher

New York Office, 220 Broadway,
Joseph Fuller, *Eastern Manager*
E. C. Kreutzberg
B. K. Price
H. R. Simonds

Pittsburgh Office, 507-8 Oliver Bldg.
S. H. Jasper
W. G. Gude

San Francisco Office, 681 Market St.
N. C. Nourse

Washington, D. C. Office,
1020 National Press Building
L. M. Lamm

London Office, Caxton House
Westminster, S. W. 1
Vincent Delport

CONTENTS

Vol. 60 **October 1930** *No. 10*

Editorial 19
Empress of Japan—New Canadian Pacific Liner 22
Silver Cypress, Twin Screw British Motorship 24
Feed Water Treatment—Method Suggested 25
By John R. McRae
Pumps Appropriate for Heavy Oils—Part II 27
By H. L. Kauffman
Ohio, New River Towboat, Makes History 30
By W. G. Gude
Violet, Lighthouse Tender, Built at Manitowoc 32
By Ralph C. Smith
Edward G. Seubert, Tanker for Great Lakes 35
Pulverized Coal Trials of S. S. Lorain 36
By E. C. Kreutzberg
Louisville, Light Cruiser, Launched at Puget Sound 39
Gears Show Little Wear after Million Miles 41
Maritime Law—Late Decisions 42
By Harry B. Skillman
Men of Marine Affairs—Photographs 43
New Construction Ordered and Contemplated 44
Ports—Marine Business Statistics Condensed 47
Books, Late Marine, Reviews of 48
What the British Are Doing in Shipbuilding 48
Stevedoring and Dock Management Progress 50
Mixed Marks Cargo Handled by Mechanical Equipment
By H. E. Stocker
From Rail to Ship in a Modern Way
Cargo Handling Features of S. S. Morro Castle
Useful Hints on Cargo Handling 55
Up and Down the Great Lakes 56
Lubrication—Pressure System on Wm. G. Clyde 57
By J. C. Workman
Marine Insurance Survey by Shipping Board 58
Patents Show Marine Development 59
By Richards & Geier
Personal Sketches of Marine Men 60
Capt. P. M. Cartwright, Pres. International Shipmasters
By E. C. Powers
Diesel Tankers for Barge Canal and Coastwise 62
Marine Disasters—a Record Off 64-66
New Trade Publications 68
Business News for the Marine Trade 68

MARINE REVIEW is a member of the Audit Bureau of Circulations, Associated Business Papers Inc. and the National Publishers Association. Entered at the Post Office at Cleveland, Ohio, as Second Class Matter, under the act of March 3, 1879. Copyright 1930 by The Penton Publishing Co., Cleveland, O.

Subscription United States and its possessions, $3 per year; Canada $4.00; Great Britain and other Foreign Countries, £1:0:0. Single copies 35 cents. Back numbers over three months 50 cents. Cable addresses: Penton, Cleveland, and Irotrapen, London.

The A. B. P. is a nonprofit organization whose members have pledged themselves to a working code of practice in which the interests of the men of American industry, trade and professions are placed first—a code demanding unbiased editorial pages, classified and verified paid subscribers, and honest advertising of dependable products.

« EDITORIAL »

Enterprise Defeats Shamrock in Four Straight Races

RACES for the America's cup during the nearly 80 years it has been in our possession have done much to promote the special art of yacht design. With all due credit to Harold S. Vanderbilt, skipper of the ENTERPRISE, and his crack amateur crew, the skill of the designer must always remain the mainstay in turning out winning boats. Had Vanderbilt and his crew sailed the SHAMROCK V against the ENTERPRISE manned by the British skipper and crew, it is possible that they might have made a somewhat better showing for Sir Thomas Lipton's entry; but they could hardly have won. All honor therefore to W. Starling Burgess, designer and to the Herreshoff Mfg. Co., builder of the ENTERPRISE. It is an odd fact that throughout all the very lengthy published references to these races the name of the American designer is practically ignored. His fame and name are undoubtedly better known in Great Britain than in the United States where greater recognition is given to creative genius. However, great credit is due to the skipper of the ENTERPRISE for his very skillful handling of the defender. The advantage of having the better boat might easily have been lost through poor judgment and clumsy handling. Skipper Vanderbilt's work was of the highest order throughout and the British press has given unstinted praise to American seamanship. The *Daily Telegraph* emphasized in addition to features of superiority of the American defender, "those talented amateurs who sailed her—a magnificant combination of talents."

Though the British are quick to say with reference to the design and sailing of yachts that Americans have nothing to learn from anybody, it is well to take this tribute mod-

estly. The brilliance of the performance is there both in design and sailing. Fortunately throughout all the races in which Sir Thomas Lipton has been the challenger, five in 31 years, the sportsmanship of both sides has been of high order. In too keen a desire to win sometimes sportsmanship is strained and the example of Sir Thomas as a good loser will, we hope, always serve as a model should fortune some day favor the challenger.

The designer of SHAMROCK V, Charles E. Nicholson, paid the highest tribute to the ENTERPRISE. His opinion is that she is a better boat than the SHAMROCK V but that her superiority lies in her mast, her boom and her rigging. The hull of the SHAMROCK, he believes, is satisfactory. The fourth race in which the SHAMROCK gained appreciably on the ENTERPRISE in the last two legs would seem to bear out the correctness of this belief. The duralumin mast on the ENTERPRISE is something over a ton lighter than the wooden mast on the SHAMROCK V and it is said by British experts to give the ENTERPRISE an advantage in stability equal to about eight tons of lead ballast on her keel or, as the son of the British designer vividly illustrated the difference, that it was equivalent to placing the SHAMROCK'S power launch half way up the ENTERPRISE mast, in the leverage produced to offset the greater weight of the wooden mast.

The second feature of the ENTERPRISE'S superiority is said to be her triangular boom, the invention of her designer, W. Starling Burgess. This boom is said to give more flow to the mainsail combined with a better setting of all the canvas. Apparently these two features on the ENTERPRISE were a surprise to the British experts.

A recapitulation of the time for the four races is given below. All of the races were held off Newport, R. I. The length of the course is 30 miles. The first race was held Sept. 13, ENTERPRISE covering the course in 4 hours, 3 minutes and 48 seconds, winning over her rival by 2 minutes and 52 seconds and a margin of one-half mile. The second race was held on Sept. 15 on a triangular course, the ENTERPRISE winning in the time of 4 hours, 0 minutes and 44 seconds, 9 minutes and 34 seconds less than SHAMROCK V, and with a margin of one and one-half miles. The third race was held on Sept. 17. SHAMROCK V being disabled early in the race, ENTERPRISE completed her course by herself, in the time of 3 hours, 54 minutes and 16 seconds. It was in the fourth race which was held on Sept. 18 that the SHAMROCK showed evidences of her possibilities. The ENTERPRISE however, easily won, covering the distance in 3 hours, 10 minutes and 13 seconds, winning over the SHAMROCK by 5 minutes and 44 seconds. The ENTERPRISE'S time beat the record over a triangular course, made by the COLUMBIA in the second race against SHAMROCK II in the 1900 series off Sandy Hook, by 3 minutes and 5 seconds. That the SHAMROCK V is fast is proven by the fact her time in the fourth race was only 2 minutes and 39 seconds more than this famous record which has stood for 30 years.

It may be interesting to note in passing that both the SHAMROCK V and ENTERPRISE were launched on the same day, April 14, 1930. The SHAMROCK V was designed by Charles E. Nicholson, probably the outstanding English yacht designer. She has a wooden hull and was built at Gosport, England. The performance of the ENTERPRISE has added new laurels to the fame of her designer, W. Starling Burgess, whose father, Edward Burgess rebuilt the yacht AMERICA, winner of the cup. The hull of the ENTERPRISE is bronze with steel frames. Now that this great contest is over the whole world pays tribute to the often defeated but ever cheerful sportsman, Sir Thomas Lipton.

Load Line for Ships in Foreign Trade

"UNEASY lies the head that wears a crown," is an old saw. And if it has any meaning it must be the nervous strain associated with great responsibilities. On the score of having at last been relieved of a real responsibility, that of deciding how deeply to load his ship, the steamship owner and operator in foreign trade may now rest easy. Effective Sept. 2 the load line of merchant vessels of 250 gross tons or over loading at or proceeding to sea from any port or place within the United States or its possessions for a foreign voyage by sea, and merchant vessels of the United States of 250 gross tons or over similarly setting out from any foreign port or place for a voyage by sea, in each case the Great Lakes excepted, is fixed by an act of the congress of the United States, approved March 2, 1929.

Everyone, owner, officer, seaman and ordinary citizen will approve this shifting of responsibility, involving the safety of life and property, from an interested individual to the impartial and impersonal authority of the government.

No practical difficulties are anticipated in enforcing the new load line regulations. It becomes the duty of the owner and master of every vessel subject to the act to have load lines conspicuously marked and to keep them

so marked. The secretary of commerce is vested with the authority to carry out the terms of the law. Recognition has wisely been accorded the American Bureau of Shipping to act for the secretary in determining the proper location of load lines. The work will be carried out as quickly as possible taking each vessel in the order of the receipt of application.

It is interesting to note in passing that the international load line convention held in London concluded its discussions on July 5, reaching an agreement among the delegates of 30 maritime nations, including the United States, on standard rules and regulations for the determination of maximum load lines for merchant ships engaged in international voyages. This convention has not yet been acted upon by the United States government but a favorable attitude is anticipated. As a matter of fact the United States load line regulations coincide exactly with the provisions of the international convention except in a few instances where a departure is necessary on account of different conditions here.

Under the present load line act shipping on the Great Lakes and coastwise is exempted. But there is at present before congress a bill which extends this legislation to these two trades. No action has yet been taken.

Supervising General's Safety Proposals

PROGRESS in our mechanical age is inevitably linked with increased hazard to life and property. Adequate safeguards must be set up to meet ever changing conditions. Rules of the steamboat inspection service in the days of sail would be about as antiquated for present conditions afloat as would the elementary traffic regulations of the horse-drawn vehicle era for modern cities.

The United States steamboat inspection service, however, has suffered from the inherent difficulties of ponderous and at times a none-too-intelligent legislative control. It has never been able to wipe the slate clean and to start from scratch to formulate practical rules based on a thorough and intelligent study of present day needs.

All of this is apropos of the anticipated objections and attendant wire pulling to nullify the bold proposal of Dickerson Hoover, supervising general of the steamboat inspection service, first, for a plan to establish passing lanes in coastwise waters, and second, the compulsory anchorage of tankers carrying gasoline or other vessels carrying inflammable cargoes in time of fog in waters where there is danger of collision with passenger ships. This recommendation for a conference to consider and take action on these two steps is the result of a study of the disaster due to the collision between the passenger steamer FAIRFAX and the tanker PINTHIS on June 10 in Massachusetts bay when the latter after an explosion sank with the loss of all hands and the FAIRFAX was damaged by fire causing loss of life.

The secretary of commerce has given his approval of the supervising general's suggestion and a conference is to be held in Washington Oct. 29. Over a thousand invitations have been issued to heads of steamship companies, representatives of the petroleum industry and port authorities to attend this conference to discuss the two suggestions with officials of the steamboat inspection service with the view of making them immediately effective. We heartily approve the initiative of Mr. Hoover and earnestly bespeak for the meeting wise and vigorous action.

Coamo Comes Through the Hurricane

SOMETIMES man's utterances have served actively to inspire and encourage individuals and institutions not for a day or a season but for years on end. Such is the motto on stone below the bust of Collis P. Huntington in the yard of the Newport News Shipbuilding & Dry Dock Co.

When the great railroad builder visioned a shipyard where rails meet the sea at Newport News he established not only a plant but a principle, which has stood as a guiding beacon ever since. He said: "We intend to build good ships here, at a profit if we can; at a loss if we must, but always good ships."

Then comes the test as it did recently in the case of the New York & Porto Rico liner COAMO in the huricane off Santo Domingo. The builder could have an easy conscience, for beyond all guarantees, he knew that he had lived up to his traditions for an honest ship.

Officers, crew and passengers were helpless in a gale that reached the unprecedented velocity of 150 miles an hour. Their only salvation at the height of the storm was the staunchness of the ship and the proper functioning of her machinery. Any mechanical flaw would have meant inevitable disaster. No hand could have stayed it.

Captain Evans, master of the COAMO and his officers and crew brought the ship through safely. And the Newport News Shipbuilding & Dry Dock Co. may feel proud of this new proof that the motto of its founder is a living active force, not merely so many fair words.

Empress of Japan

new Canadian Pacific liner

HARDLY had the EMPRESS OF JAPAN, new fast passenger ship for the Canadian Pacific Steamship Lines Ltd. left the yard of her builder, the Fairfield Shipbuilding & Engineering Co., Ltd., Govan, Scotland than she began to make records. Leaving Liverpool for Quebec on June 14 at 5 p.m. she arrived at Father point early June 20, making a new record for the fastest time between Liverpool and Canada. In the September number of MARINE REVIEW it was noted that she had completed a record passage across the Pacific from Yokohama to the British Columbia quarantine station in 8 days 6 hours and 53 minutes, a distance of 4814 miles. And again after having broken the east bound transpacific record she recently reduced by 22 hours the previous record from Victoria, B. C. to Honolulu. She made this trip in 4 days, 15 hours and 50 minutes, having sailed from Vancouver for Honolulu and the Orient Sept. 4 touching at Victoria, B. C. on the way.

The EMPRESS OF JAPAN arrived at Yokohama, Sept. 18, breaking still another record in making the trip from Honolulu to Yokohama in 6 days 19 hours and 43 minutes. This is approximately 20 hours faster than the previous record which was held by the Japanese liner CHICHIBU MARU. It is interesting to note in passing that during a little over one month the new EMPRESS OF JAPAN has broken the record for each leg of the voyage between Yokohama, Vancouver, Victoria, B. C., and Honolulu, returning to Yokohama.

These are remarkable performances but in addition the EMPRESS OF JAPAN is outstanding in engineering efficiency. Her fuel consumption per shaft horsepower per hour for propulsion alone is said to have reached the low figure of .552 and for all purposes .603 pound. It is recognized that much of the credit of the excellent engineering performance of this vessel is due to the courage and initiative of John Johnson, superintending engineer of the Canadian Pacific steamships.

The EMPRESS OF JAPAN is a twin screw geared turbine ship with high pressure watertube boilers. Each propeller is connnected to a set of single reduction geared Parsons turbines consisting of high, intermediate and low pressure units in series designed for a working steam pressure of 375 pounds per square inch, superheated to a temperature 700 degrees Fahr. At 21 knots sea speed (which has been bettered in service) the total shaft horsepower is 26,100. There are six watertube boilers of the Yarrow type, and two scotch boilers. The watertube boilers are designed for a pressure of 425 pounds and are operated under forced and induced draft to supply steam to the turbine at the pressure and temperature indicated above. The scotch boilers have a working pressure of 200 pounds per square inch and are fitted with forced draft. All boilers burn oil. Practically all of the auxiliary machinery is electrically driven. Current is supplied by four 300-kilowatt diesel generators and two 600-kilowatt turbine generators. They may be used in combination or separately steam or diesel as may be desired.

The EMPRESS OF JAPAN is 666 feet in length over all; 87 feet in beam and the depth to A deck is 56 feet. Her operating displacement is around 27,400 tons and her gross tonnage is 25,000. She is the largest and fastest steamship engaged in regular service on the Pacific. Before going into the service she made one voyage to Quebec returning to Southampton and

from there to Hong Kong. She is now on her regular berth and as noted above is making history in this run.

She has a passenger capacity of 400 first class, 164 second class, 100 third class, and 548 Asiatic steerage passengers. She has six decks lettered from A to F. The boat and promenade decks are each over 300 feet in length and the navigating bridge above the boat deck is 68 feet above the normal load waterline. Every feature of convenience and safety in navigation has been considered in her arrangement and equipment. First class passengers are quartered on A and B decks. Second class passengers are quartered aft on B and C decks and third class passengers aft on D deck. Second class cabins on B deck can be easily converted into first class staterooms.

Among the first class accommodations are two de luxe suites with bedroom, sitting room, veranda and bathroom, 12 two bed special staterooms with bath, 28 one bedstead and 106 two bedstead ordinary staterooms. All of the special staterooms and the deluxe suites have inter-communicating telephones. A promenade space of 31,000 square feet is available for first class passengers, including the long covered promenade deck, the boat deck, and the top of the house. On the latter level is the large sports or sun deck.

First class staterooms are designed and finished in the best taste in keeping with the luxury and beauty of the public rooms. They are all practically outside rooms, with ship's side lights and are provided with bedsteads instead of berths. Most of the first class staterooms are fitted with intercommunicating doors for the convenience of groups of two or more traveling together. Electric lighting has been carried out without stint. Usual steam heating and ball louvre ventilation of a perfected type are supplemented by electric fans and plugs for electric heating. Wardrobes with pier glass dressing tables with triple folding mirrors and pedestal wash basins with running hot water and cold fresh water are some of the modern improvements. The special staterooms, for instance, are decorated alternatively in walnut with satin wood finish, Quebec birch and black bean. In the de luxe suites the bedrooms are paneled in olive wood. The furniture is covered in creamy purple damask and the twin beds of special design are recessed. The comfortable sitting rooms of these suites are finished with decorative landscapes in tones of pearl grey. The veranda is given a cool and fresh appearance with tiled floor, flower boxes and wide expanse of windows.

Front Rank of Luxury Liners

This vessel is in the front rank of luxury liners and the ornamental designs and costly furnishings of the public rooms are unexcelled by any modern ship. Cool fresh colors have been used in decorations on account of the length of time she will spend in warm climates.

One of the striking features in all of the public rooms is the quantity of light obtained by day from large windows and domes and by night from modern electric lighting effects. The high walls of the public rooms are generally of wood in its native state or waxed so that the natural beauty of the grain is the main decorative motive. The glass domed lounge finished in mountain ash and walnut is an excellent example of this treatment which has also been carried out in the de luxe suites and special staterooms.

In the spacious palm court or ball room at the forward end of the promenade deck natural oak trimmed with gilding takes the place of ash. This room is open on three sides forward and to starboard and port, to wide sea views through broad windows partially screened by palms and flowers. Concealed electric lighting in the decorated ceiling can be changed instantly in color scheme.

In the smoking room effective use has been made of inlaid teak floor and walnut skirting in contrast with selected light grained mahogany which is studded with bronze nails to obtain a trellis effect. There is a monumental chimney piece of carved Roman stone crowned with a cut glass over mantle.

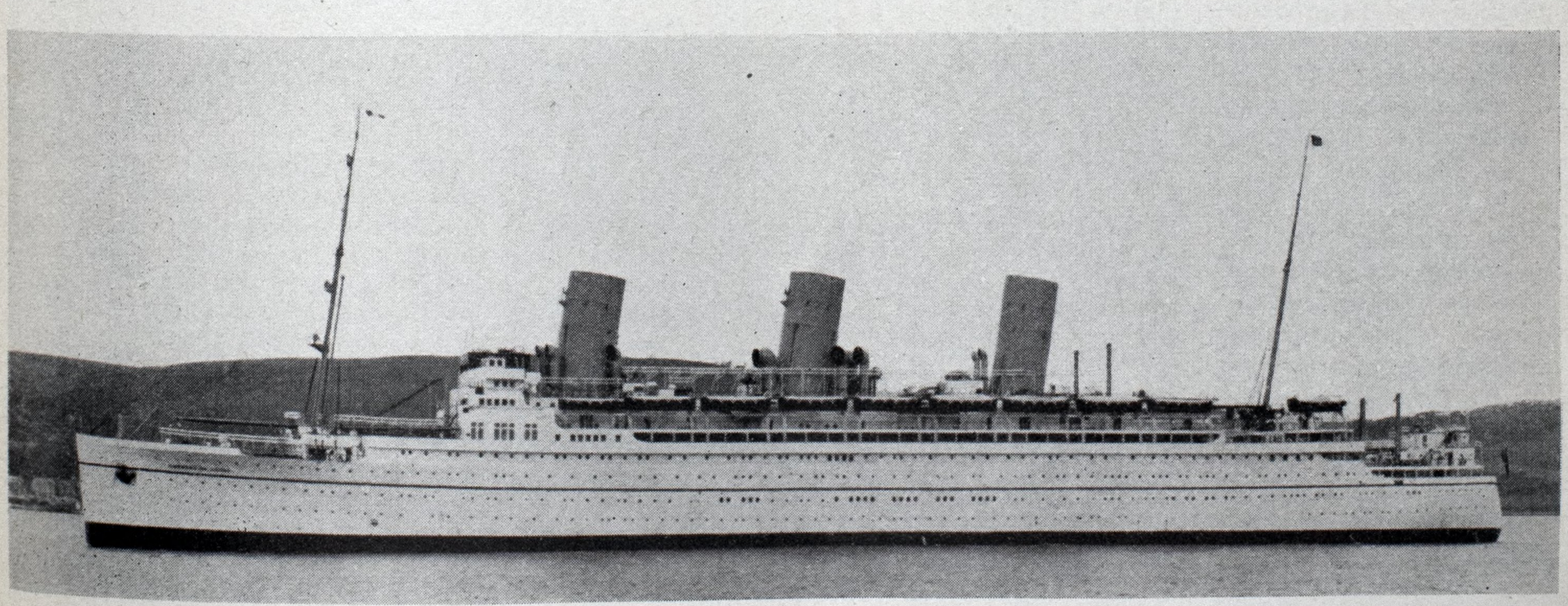
A feature of unusual interest is the long gallery communicating aft with the smoking room and forward with the palm court, on the port side of the promenade deck. It is simply finished in ash and walnut. Leading from the long gallery amidship are glass doors, giving onto the main entrance hall which is one of the most important spaces on the ship. The shop attractively designed with colonades occupies a central position facing the wide staircase paneled in ash and walnut and flanked by massive carved balustrades. Here are located telephone boxes and revolving doors lead to the open deck. Passenger elevators are also entered from this space.

Near the main entrance are the card room and writing room, both of which are finished in the early Georgian style. The walls of the card room are painted a light coral and those of the writing room cream. Subdued lighting reflected from a coved ceiling gives a pleasant lighting effect. The furniture is of mahogany.

Attention has been given for making the children's room and the gymnasium most suitable for their purposes. The green and black marble swimming pool is located below on D deck and can be reached by an elevator from the gymnasium.

The galleys and service arrangement on the EMPRESS OF JAPAN are thoroughly modern and most complete in equipment. All cooking is done in the huge spotless kitchen by electricity. A number of improvements in the storage and handling of foods have been introduced.

The dining saloon is located on C deck and is one of the finest rooms afloat. It has a seating capacity of 274 persons at a single sitting. With the two adjoining private dining rooms thrown into the main hall 294 persons may be seated. It is decorated in the Louis XIV period and is supported by marble columns with bronze trim. Teak framed glass doors lead



S. S. Empress of Japan—Twin Screw Geared Turbine Liner—Service Between Vancouver and the Orient

into the dining saloon. A lofty effect is obtained by means of a large open well with a gallery to port and starboard. Dark carved mahogany furniture is used and the room is lighted through sliding windows over the side lights. Carved teak shutters are provided.

On A deck are located an up-to-date barber shop, a ladies' hair dressing saloon, a photographer's dark room and the hospital. In the central hall are the company's offices, ticket agents and purser's rooms.

There are lifeboats for more than the full number of passengers and crew. These boats are slung on 20 sets of Welin-MacLachlan davits. Two motor boats and two small work boats are also included.

No ship, it is safe to say, has gone more fully electric. The EMPRESS OF JAPAN is most completely equipped throughout, including wireless teleraph, direction finding and submarine signalling apparatus, electric sounding machine, gyro compass equipment and clear view screens, orchestra and phonograph repeater installation, moving picture apparatus and an extensive telephone system. Electricity is used for heating, cooking and power installations of all kinds going further in this direction than ever before on any first class liner.

Lamport & Holt, shipowners and one of the Royal Mail group of steamship companies, went into receivership on Aug. 27. The company's balance sheet for December, 1929 showed loss of £70,155 after providing for interest of £147,500 on 2,950,000 5 per cent debenture stock. The loss of the steamship VESTRIS off the Virginia Capes in 1929 was a heavy financial strain on Lamport & Holt. The company was founded 85 years ago. Besides Lord Kylsant, its directors include the Marquis of Carlsbrooke and Lord Suffield. The company will continue to operate through the receiver and manager and in time hopes to recover its former prosperity.

New Regulations Are Issued on Ship Repair Duty

The treasury department on Sept. 4 announced the new regulations governing the entry of and payment of duty on equipment and repairs to American vessels engaged in the foreign or coasting trade. Provisions of the new tariff law relating to repairs on American vesesls abroad call for the payment of an advalorem duty of 50 per cent on the cost of equipment, which shall not include the compensation paid for such repairs. For repairs occasioned through casualty or stress of weather, a refund of duties is allowed under virtually the same procedure as was prescribed by the act of 1922.

A copy of the communication sent to collectors of customs detailing the information which must accompany requests of American shipowners seeking refund of duties on repairs made or equipment purchased abroad was issued by Secretary Mellon when announcement of the new regulations was made. The regulations provide that an affidavit shall be submitted "in cases where the master of a vessel seeks relief from the assessment or refund of duties on repairs made or equipments purchased, due to a casualty or stres of weather encountered in the voyage accompanied by itemized bills covering the cost of the repairs made or equipments purchased; certified abstracts of the ship's log when stress of weather is claimed, and a certificate of the proper officer when the repairs are made in order to obtain a certificate of seaworthiness."

This affidavit shall set out fully the following information: (1) The nature of the casualty or stress of weather, if any, encountered; (2) when and where the casualty or stress of weather occurred; (3) the damage done by the casualty or stress of weather; (4) the port where the repairs were made or the equipments secured, and, (5) a statement of the master of the vessel as to whether or not the repairs or equipment were required to secure the safety and seaworthiness of the vessel to enable her to reach her port of destination.

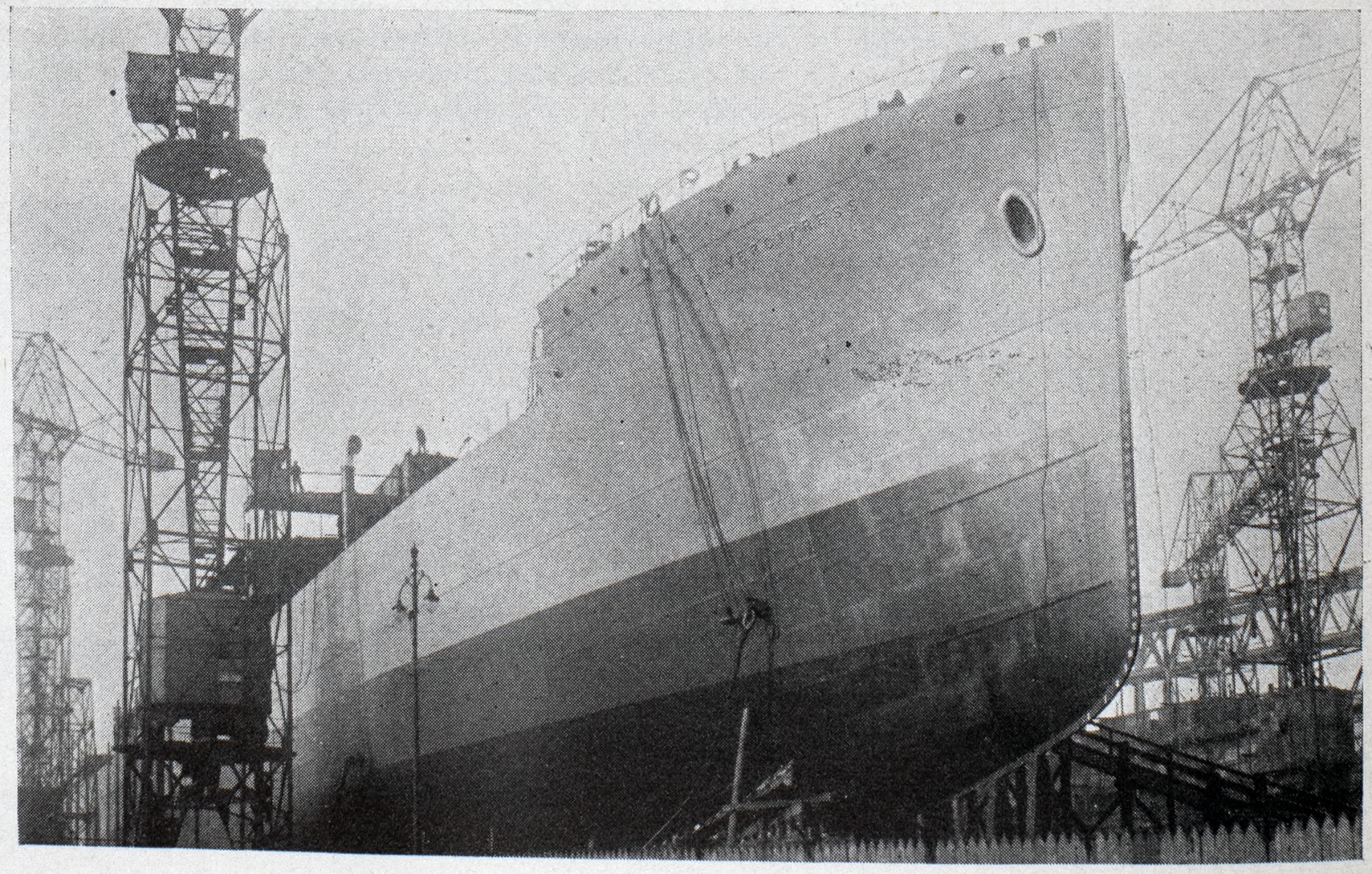
The value of all ships now under the control of the United States shipping board Merchant Fleet Corp. is approximately $74,000,000, according to statistics made available at the board. Since the enactment of the merchant marine act of 1920 the total number of vessels which has been sold by the board was 1,569 for which a total of $123,823,573 was returned. Of this number of ships, 552 cargo vessels were sold for operation, 92 were tankers, 4 were refrigerators, 43 were passenger ships, 41 were tugs, 259 were miscellaneous and 578 were scrapped. The government fleet now consists of 429 cargo vessels, 2 passenger ships, 10 refrigerator vessels, 1 submarine, 1 tanker and 9 tugs, a total of 452 ships.

Launch Twin Screw British Motorship

HARLAND & WOLFF, successfully launched recently from their South Yard, Belfast, the twin screw motor cargo vessel SILVERCYPRESS, the first of four similar vessels ordered by Stanley & John Thompson Ltd.

This boat has been built to meet the requirements of Suez and Panama Canal certificates. The principal dimensions are: Length B. P., 455 feet; breadth molded, 61 feet 9 inches; depth, 40 feet; gross tonnage, 6200.

She is of the open shelter deck type.



Don't Guess in Treating Feed Water

Know Your Boiler Water by Testing for Impurities—Use Approved Methods for Nullifying Effect of Harmful Ingredients

By John R. McRae

IN ORDER to obtain maximum efficiency and life from a modern boiler, it is essential that proper attention be given to the question of feed water. Generally, vessels operating on the Great Lakes use water that is essentially of uniform quality. This, however, is not strictly true, as there are variations between the water at the head and foot of the lakes. Whenever vessels are in ports that are located at the mouth of a river, or any appreciable distance upstream, there is a likelihood of a variation in the quality of the water. These variations, although existing, average out to such an extent that we may, for the purpose of this article, consider Great Lakes water as being of uniform quality.

A typical chemical analysis would show about the following composition:

Minerals	Grains per U. S. Gal
Calcium Bicarbonate	5.8
Calcium Sulphate	1.7
Magnesium Bicarbonate	2.4
Magnesium Chloride	.3
Sodium Chloride	.9
Iron Oxide & Alumina	.1
Silica	.3
Organic matter	1.4
Suspended matter	.6

Although the above analysis indicates a water generally found throughout the lakes, many individual variations will be noted. Considerable danger of industrial pollution also exists. The greatest effect of such pollution will be corrosion.

To successfully combat the scale and corrosion which will result from the use of waters of this nature, it is necessary to consider the percentage of raw water in the feed, the type of purifying equipment and condensers, as well as the operating pressure, before detailed treatment can be successfully outlined.

Scale Forming Minerals

Of the solids given in the above analysis, calcium sulphate is the most troublesome from the viewpoint of scale, for this material rapidly deposits on the heating surface as a hard tenacious film and, as a result, the transfer of heat from the hot gases to the water is reduced, and the fuel consumption will be increased. If allowed to go far enough, the output of the boiler is materially lowered and the efficiency is reduced.

In boilers operating at high ratings, the principal danger from the scale deposit lies in the possibility of portions of scale cracking loose and lodging in the tubes, causing overheating of the tube wall at that point. Serious bagging and rupturing of the tubes rapidly follow.

Calcium and magnesium bicarbonates are readily converted by heat to the corresponding carbonates which are essentially insoluble in water. In this form, and by themselves, they tend to form a sludge rather than a hard scale. In conjunction with scale forming materials, they frequently adhere to the heating surfaces, thus producing hard scale equally as troublesome as calcium sulphate scale.

To overcome the scale forming tendency of calcium sulphate, the usual procedure, in nonevaporating plants, is to convert it, by chemical means, to either calcium carbonate or calcium phosphate. To bring about the first condition, sodium carbonate, or, as it is commercially known, soda ash is used. For the second case, some one of the several phosphates of sodium are employed. When soda ash is present in the boiler, there is a partial conversion to the hydroxide or caustic form. The extent to which this conversion takes place depends upon the steam temperature, the amount of carbon dioxide which is being introduced into the boiler and the rate at which the carbon dioxide is being removed from the boiler with the steam. In general, the higher the pressure and rating, the greater will be the conversion to caustic. If the soda ash has been converted to the caustic form, it has lost its quality to react with calcium sulphate. If the calcium sulphate is completely converted to the carbonate form before entering the boiler, the aforementioned troubles will not occur.

Removing Suspended Matter

The calcium and magnesium bicarbonates can be eliminated by means of heat or by the use of lime. In both cases, carbonates are formed, but there is a distinct difference in the final results, in that the use of lime increases the amount of sediment formed. With an external treatment, this increased sediment is of less moment than where the treatment is fed into the boilers.

The foregoing analysis shows that there is about 1.1 pounds of scale and sludge forming material in every 1000 gallons of lake water, hence it can be readily observed that the total accumulation within a boiler will soon be serious unless steps are taken to remove same.

Suspended matter can be removed either by permitting it to settle or mechanical filtration, but these two methods leave the dissolved solids untouched. If, now, we treat the water along the lines already discussed, we can convert the undesirable scale and sludge forming materials into a suspended form, whereby they will yield to settling or mechanical filtration.

The presence of magnesium chloride in feed water means that corrosion in some, if not all, parts of the boiler will ensue unless this mineral is converted to a non-reacting form. Soda ash will accomplish this purpose and, in so doing, will produce sodium chloride, which is soluble and not troublesome unless present in

IT is well established that for the treatment of average lake water three chemicals are required; soda-ash, tri-sodium phosphate (or any one of the phosphates) and sodium sulphate. An engineer should have at least a simple water testing kit with which he can readily determine alkalinity, sodium phosphate, hardness, chlorine and sulphates in the boiler water.

Having tested the water, neutralizing chemicals noted above should be added in amounts necessary to give the correct characteristics so that the chance of scale formation, corrosion and caustic embrittlement will be eliminated.

The operating engineer whether on the lakes or ocean no longer needs to be in a quandary concerning his boiler water and its treatment. Practical investigations by competent authorities point directly to effective methods of control.

The author, John R. McRae, is the Great Lakes marine representative of the Babcock & Wilcox Co., with office in Cleveland.

very large quantities. At the same time, magnesium carbonate or bicarbonate is formed, hence it is necessary to further treat in order to completely eliminate the magnesium salt. This is usually done by the use of lime, which results in the formation of magnesium hydrate. The magnesium chloride can be treated directly by the use of caustic soda with a direct formation of sodium chloride and magnesium hydrate.

Danger In Acid Formations

Magnesium chloride, when present in the boiler, causes trouble to a much greater extent than would be expected from the amount present in the water. Under the influence of temperature and pressure within the boiler, magnesium chloride dissociates into hydrochloric acid and magnesium hydrate. The hydrochloric acid attacks the metal of the boiler and forms iron chloride. The iron chloride then dissociates and produces more hydrochloric acid which in turn again attacks the metal. This process keeps on repeating indefinitely so that a small amount of magnesium chloride can cause very serious corrosion in a boiler.

In recent years, the trend has been to boilers capable of producing larger quantities of steam at higher pressures and efficiencies and, at the same time, occupying less room, thus increasing the space available for cargo, as well as the general efficiency of the power plant. These conditions increase the rate at which heat must be transferred and therefore demand care in the maintenance of the boiler to an extent unthought of years ago.

Ships operating on the Great Lakes usually have short runs and much shorter time in port, hence the necessity of maintaining the boilers in first class condition, both as to cleanliness and repair. When the water is properly treated so as to prevent scale and sludge formation, the boilers can be readily kept clean internally and thus avoid the necessity of opening up the boilers for cleaning except at long intervals.

Should Have a Testing Kit

In order that the enginneer may know whether or not his boiler water is in proper conditon, various tests and testing equipment have been devised. Every ship should be equipped with a suitable testing kit. The chief engineer should also make certain that the boiler water is tested regularly and proper treatment applied in accordance with the results of tests.

In general, feed water tests depend upon determining the alkalinity, which should be carried at a point representing a small excess. At the same time, it must be borne in mind that a large excess of alkali may be dangerous, as it has been found, with boilers operating for a period of time with waters which contain too much alkali and at the same time an insufficient amount of soluble sodium sulphate, that a condition which has been termed "caustic embrittlement" will develop. This phenomena produces cracking in the plates at the seams and usually makes itself known by leaking around rivet heads, which leaking cannot be stopped by caulking, due to the condition of the metal affected. Usually such rivet heads are easily knocked off with a good hammer blow. Further investigation discloses that the plate is so badly cracked as to necessitate condemning the drum.

To prevent scale formation and corrosion, it has been found that the alkalinity should not be less than 15 grains per gallon and, to avoid the so-called "embrittlement," the alkalinity should not exceed 25 to 30 grains per gallon. At the same time, a ratio of sodium sulphate to total equivalent sodium carbonate should be maintained in accordance with the following table promulgated by the American Society of Mechanical Engineers' code for the care and operation of boilers:

Working Pressure of Boiler—Lb. Gage	Sodium Sulphate to Total Equiv. Sodium Carbonate Ratio
0—150	1 to 1
150—250	2 to 1
250 and over	3 to 1

Error is Corrected

In the story on the S. S. Morro Castle which appeared in the September issue of Marine Review an error was made in crediting the General Electric with the motors for driving deck auxiliaries.

All cargo winches, the capstan and the windlass on the Morro Castle are operated by Westinghouse Electric & Mfg. Co. motors and controls.

The 1930 national convention and banquet of the Propeller Club of the United States will be held during November in New Orleans, according to announcement by Harry W. Parsons, national president, the definite date to be announced later. It will be the first time that the national convention has been held outside of New York. The program outlined provides for land and water trips of inspection of the port of New Orleans.

Ships Establish New Speed Records on Various Runs

In addition to the various speed records made by the new Canadian Pacific liner Empress of Japan, which are given in detail on page 22 in this issue, notable speed has marked the performance of vessels on several runs recently.

The turbo-electric Ward liner Morro Castle docked at Havana on Aug. 26, having made the run from New York in 59 hours, beating the company's former mark by 10 hours 44 minutes. The average speed of the ship was 20.5 knots while the best speed made on the trip was 21 knots.

When the Lloyd Sabaudo liner Conte Grande recently arrived in New York she had established a new speed record for an Italian ship of six days from Gibralter and eight days from Naples. Mail from Genoa, Marseilles and Barcelona was delivered on board the Conte Grande at Gibralter by a seaplane of the Navigazione Aerea, which had left Genoa almost two full days after the departure of the liner from that port.

The Canadian Pacific Steamships 20,000-ton Duchess of Bedford set a new record of six days, 18 hours and 30 minutes between Liverpool and Montreal, arriving at the latter port of Sept. 6. This was one hour and 15 minutes faster than her previous record.

The new motor liner City of New York of the American-South African line arrived at Brooklyn, N. Y. on Aug. 27 with a new record for the direct run between the United States and South Africa, bettering her previous time for the distance by 12 hours. She left Cape Town on the evening of Aug. 5 and although she stopped at Trinidad, completed her journey to New York in 21 days and 12 hours.

The Blue Funnel twin screw steamer Adrastus of 7,900 gross tons left New York on July 26 for Manila and arrived at that port on Aug. 30, having made the run in 34 days and 11 hours. The trip was made via the Suez canal with stops at Penang and Singapore, thence to Manila. The best previous record direct to Manila was 36 days.

The mail steamer Malayan Prince of the Prince line sailed from New York for Yokohama via Newport News and Los Angeles on July 27, making the run to Yokohama in 31 days, Kobe 34 days, Shanghai 37 days, Hong Kong 42 days and Manila 44 days.

The motor liner Kungsholm of the Swedish-American line beat her own record from New York to Sweden during the last week in August when she reached port with a running time of seven days, 19 hours and 42 minutes. On one of her recent voyages from Gothenberg to New York she covered the distance in 7 days, 22 hours and 23 minutes, beating by 55 minutes her previous record for the westbound passage. The Kungsholm now holds the record for both eastbound and westbound passages between America and Sweden.

The Buckeye State, loaded with canned goods from Camden, N. J. and bound for Chicago is reported to have hit a reef in Lake Michigan off the Wisconsin shore. The vessel managed to reach Milwaukee where temporary repairs were made following which she proceeded towards Chicago. The Buckeye State was described and illustrated in the September issue of Marine Review.

What Pumps to Use for Heavy Oils

Selection, Installation and Care of Pumping Equipment for Handling Oils — Particular Reference to Use at Ports and Terminals

Part II

By H. L. Kauffman

WHEN fuel oil, lubricating oil, or any other kind of oil or liquid is pumped through a pipe there is a continuous loss of head or pressure. In other words, as the oil gets farther away from the pump, the pressure that is forcing the liquid through the pipe gradually becomes less. The amount of this loss of head is influenced by these factors:

1. The velocity of flow of the oil.
2. The roughness of the inside of the pipe.
3. The size of the pipe.
4. The length of the pipe line.

The last three items mentioned are probably the most important; and as the size of the pipe and the roughness of the inside are almost the same throughout the length of the line, it can be said with a fair degree of accuracy that the loss of head in a pipe line is in direct proportion to the length of the line. In all cases, however, there is additional loss of head caused by curves, elbows, etc., in the line.

The quantity of "heavy" oil that a line will deliver in an hour depends on the speed with which the oil is forced through the pipe. Just as long as the stream of oil is flowing smoothly and quietly, the speed with which it moves will become greater with a corresponding increase in pressure. But when a certain point is reached, an increase in pressure will cause the oil flow to become choppy and irregular. This causes the velocity of the oil to decrease and, consequently, less oil will pass through the line.

Loss of head due to friction in pipes has been worked out and published in tabular form by the leading pump manufacturers. Such a table shows the head in feet of water necessary to force liquids of various viscosities and specific gravity of unity, and in various quantities, through 100 feet of clean new wrought iron pipe of sizes commonly used.

In operation, piston pumps merely transmit pressure from the pressure source (steam, compressed air, gas, or whatever the source of pressure may be) directly to the liquid to be pumped. If the heads of both the steam piston and the liquid plunger are of the same size, the pressure will be transmitted unchanged; but if the area of the plunger head is less than that of the steam piston, then the pressure exerted by the plunger will be stepped up proportionately. Pump dimensions are stamped on all piston pumps, the designation 4" x 4" x 6", meaning that the diameter of the steam piston is 4 inches, the diameter of the plunger head is 4 inches and the length of the stroke is 6 inches.

The word efficiency used in connection with pumping machinery has become ambiguous and has led to many unnecessary disputes in the interpretation of guarantees and contracts. This uncertainty can be and should be eliminated by clearly stating that the guaranteed efficiency is to be the mechanical, hydraulic, volumetric, thermal, or overall efficiency of the pump. When it is considered that each of these efficiencies has an entirely different value and that they are independent of each other, the necessity for a clear definition of the term efficiency is apparent.

The losses in a pump due to the friction of the moving parts are expressed by the mechanical efficiency (μ_m). For a steam-driven pump this is the ratio of the power developed in the liquid end (P_e) to that developed in the steam end (P_s). It is expressed

$$\mu_m = \frac{P_e}{P_s}$$

For a pump driven by an electric motor, the mechanical efficiency (μ_m) is the ratio of the water horsepower (P_w) output to the brake horsepower (P_b) input at the pump coupling or pulley, and is expressed

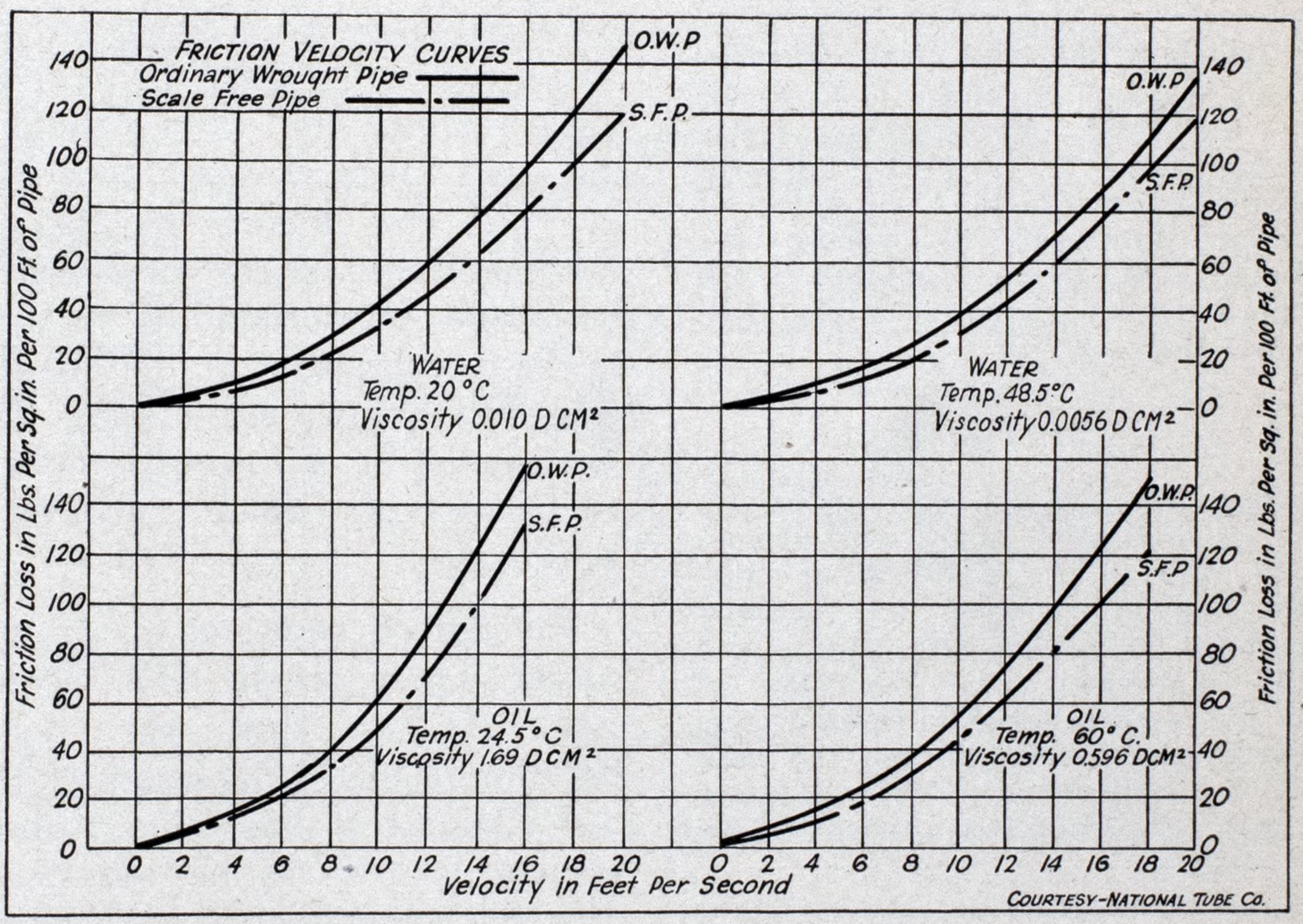
$$\mu_m = \frac{P_w}{P_b}$$

The mechanical efficiency can be determined only by actual test with the different types of pumps. It will be found to vary with the size of the pump, the type and the service.

The *hydraulic efficiency* (μ_h) is the ratio of the total head pumped against (h) to the total head pumped against plus all hydraulic losses (h_i). It is expressed

$$\mu_h = \frac{h}{h_i}$$

The hydraulic losses comprise all



Loss of Flow Due to Friction in Ordinary and Scale Free Pipe

This is the second and concluding installment of an article in two parts prepared exclusively for MARINE REVIEW. The first part appeared in the September issue.

losses, including the velocity head, from the source of supply through the liquid cylinders to the point where the discharge gage is attached.

The *volumetric efficiency* (μ_v) is the ratio of the actual discharge in gallons per minute (V) to the plunger or piston displacement (D) expressed in the same unit. It is expressed

$$\mu_v = \frac{V}{D}$$

Thermal efficiency (μ_t) is the ratio of the heat utilized by the pump in doing useful work to the heat supplied. It is expressed

$$\mu_t = \frac{42.44 \times P \times 60}{S\ (H - h)}$$

Where 42.44 = Heat equivalent of one horsepower in B.t.u. per minute.
P = Horsepower
S = Steam consumed in pounds per hour.
H = Total heat in one pound of steam at initial pressure.
h = Total heat in one pound of feed water.

The term *indicated pump efficiency* (μ_{pi}) is not often used. F. F. Nichel in his book, *Direct-Acting Steam Pumps*, page 15, gives the indicated pump efficiency as "the ratio of power developed in raising the water to the power developed in the pump end as disclosed by the indicator diagrams" or

$$\mu_{pi} = \frac{P_w}{P_i}$$

Where P_w = water horsepower and P_i = indicated pump horsepower. The value of P_w is calculated from the amount of water (G) actually pumped in gallons per minute and the total head (h). The value of P_i is the horsepower calculated from the displacement (D) and the indicated head (h_i). The indicated pump efficiency can then be expressed

$$\mu_{pi} = \frac{G_h}{D_{hi}}$$

It is also the product of hydraulic efficiency (μ_h) and the volumetric efficiency (μ_v), or $\mu_{pi} = \mu_h \times \mu_v$ and comprises all the losses in the liquid end.

The *total efficiency* (μ) indicates the overall economy of the pump and is expressed

$$\mu = \mu_m \times \mu_h \times \mu_v$$

Installation and Care of Pumps

In the care of piston pumps, three things are of importance:

1. The packing in the stuffing-boxes should be kept tight.
2. The pumps should be well lubricated.
3. Piston pumps should never be raced, or run at excessively high speeds, since racing both injures the pump and gains nothing in pressure or in rate of discharge.

In the installation, operation and maintenance of rotary pumps particular attention should be given to the following:

The pump should be located in an accessible place so it can be inspected during operation. Place pump as close to the liquid supply as possible so as to make suction pipe short and direct. It should have a good foundation, preferably of concrete, and must be level and properly lined up. A flexible coupling will not compensate for misalignment. Be sure couplings are not together on direct connected line of pumps.

Connecting pipe lines must line up naturally. Do not force them into place with flange bolts, as this may draw pump out of alignment. Pipes should be supported independently of pump so as not to put any strain on pump casing. After the piping has been installed, the alignment should be checked again, and if necessary, corrected.

When drains are used, pipe the drain connections from drip pocket to a waste line that can be readily cleaned. When self-oiling bearings are used, clean out bearings with kerosene, drain and fill with good motor oil.

Test rotation of motor, and see that it rotates in the direction of the arrow on pump casing. In the case of the direct coupled unit this must be done before replacing coupling bolts. Put coupling bolts in place; if there are marks on the coupling halves they must be opposite each other.

When properly aligned, pump and motor can be turned over by hand, provided stuffing boxes are not too tightly adjusted.

If the pump does not discharge liquid after operating a minute, stop the pump and prime it by pouring some of the liquid into the discharge opening of the pump. (It is advisable to leave a tee or Y connection in the pump discharge pipe for this purpose.) A foot valve in the suction line will keep the pump primed. The net area of the foot valve should be at least equal to the area of the suction pipe, preferably larger.

Do not draw glands tight. A slight flow of liquid from the stuffing boxes when pump is running preserves the packing. When this stuffing box leakage is not advisable because of high value or inflammability of the pumpage, the packing should be replaced often to prevent the packing scoring the shaft.

The suction piping should be as direct and short as possible, and of a diameter at least one size larger than the pump connection, except when the lines are very short. Length and size of suction pipe are determined by the maximum, allowable total suction lift, which should never exceed 22 feet, friction included. Hot liquids must flow to the pump by gravity with a positive pressure in excess of the vapor pressure of the material handled.

Piping should be laid out so that air pockets are eliminated and should be tested with pressure for leaks. To protect the pump from being clogged with foreign matter, a strainer should be installed with a net area at least three to four times the area of the suction pipe.

A bypass line containing a relief valve can be installed between pump and discharge gate valve to protect

Naval Architects and Marine Engineers Aid Industry

Shipbuilding is active in the United States. Plans are under way for many important ships including two superliners to be equal to anything afloat. The entire marine industry is feeling the stir of activity. All through the years since it was founded in 1893 the Society of Naval Architects and Marine Engineers has been an outstanding factor in the development of the art of ship design and shipbuilding. It has served as a medium for the exchange of ideas and experience.

An active campaign is now under way to obtain new members. To do this, we feel certain, all that is necessary is to call attention to the value of the society to the marine industry. Through its activities, including the published transactions, you are kept in close contact with new developments. There are three classes of membership, members, associates and juniors. Whatever your part in the industry may be, if you are interested in its condition and progress you can readily qualify for membership in the society. Write to T. J. Kain, Society of Naval Architects and Marine Engineers, 29 West Thirty-ninth street, New York City for full information.

pump in case of accidental closing of this valve. The bypass line should be piped back to the suction line or source of supply, preferably the latter, as this will eliminate unnecessary disturbance of liquid at the pump suction. Then relief valve should be set to a pressure slightly above the maximum pressure desired at the pump discharge and not more than 10 per cent above pressure for which the pump is sold. A riser approximately five times the pipe diameter should be installed on the discharge side of the pump to prevent gas or air pocketing in pump.

If, after a rotary pump is installed, it fails to function properly, same may be due to one of the following reasons:

No Liquid Delivered

1. Pump not primed.
2. Suction lift too high. Check with a gauge at the pump suction.
3. Rotating in wrong direction.

Not Enough Liquid Delivered

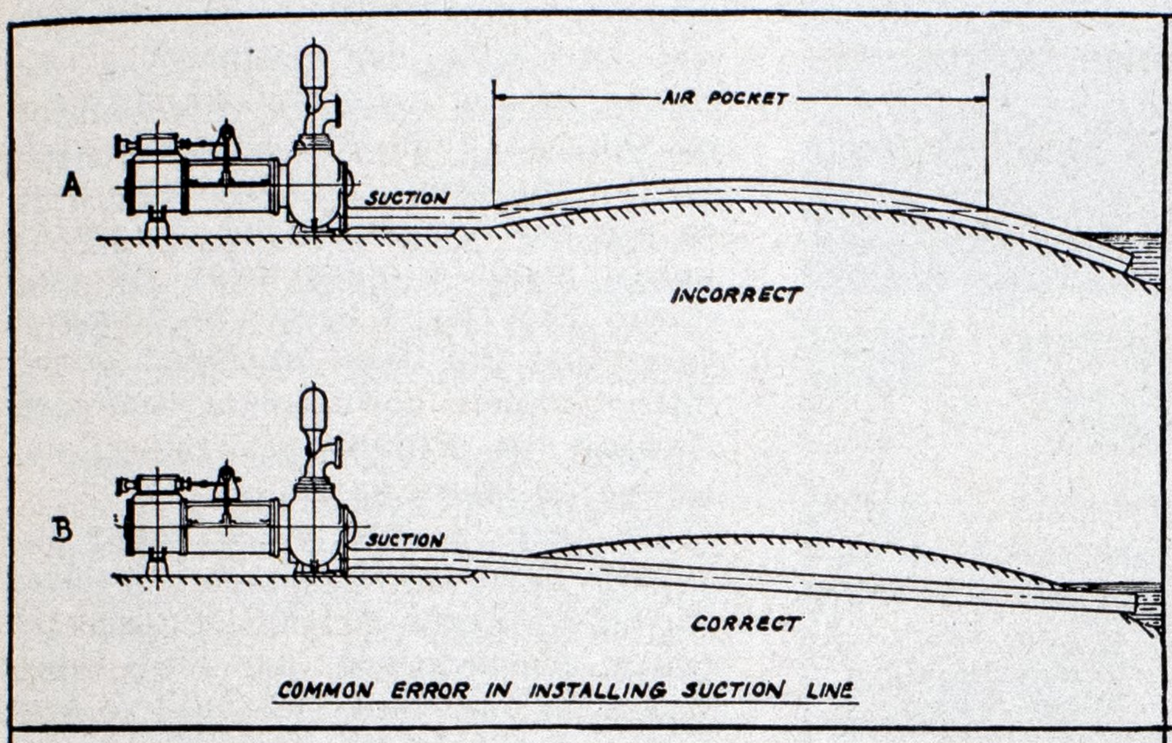
1. Air leaks in suction or through stuffing box.
2. Speed too low.
3. Suction lift too high.
4. Too much suction head (for hot liquids).
5. Foot valve or end of suction pipe not immersed deeply enough.
6. Foot valve too small or obstructed.
7. Piping improperly installed permitting air or gas to pocket in pump.
8. Mechanical defects:
   Pump damaged.
   Pump badly worn.
   Packing defective.

Pump Delivers for A While, Then Quits

1. Leaky suction lines.
2. Suction lift too high.
3. Air or gases in the liquid.
4. Pump cut out by sand or other abrasives in liquid.

Pump Takes too Much Power

1. Speed too high.
2. Liquid heavier or more viscous than water.
3. Suction or discharge line obstructed.
4. Mechanical defects.
   Shaft bent.
   Rotating element binds.
   Stuffing boxes too tight.
   Misalignment, due to improper connections to pipe lines or installing on foundation causing spring in cylinder or base.
5. Misalignment of coupling (direct-connected units).



Methods of Connecting Suction Pipe to Direct Acting Pumps as Recommended by Worthington Pump & Machinery Corp.

Awards Conversion Contract

On Sept. 22, the United States shipping board announced that a loan of $6,540,000 has been granted to the Baltimore Mail Steamship Co. for reconditioning and converting into combination cargo-passenger vessels, five ships purchased from the board. The contract was awarded the Federal Shipbuilding & Dry Dock Co., Kearney, N. J. The loan will be used for remodeling the vessels to increase their speed to 16 knots.

The Baltimore Mail Steamship Co. is a new line and will operate from Baltimore and Hampton Roads to Bremen and Hamburg, Germany. This route has already been certified as an essential mail route by the postmaster general.

Net profit of the American-Hawaiian Steamship Co. for the six months ended June 30, after all charges, was $163,428, or 34 cents per share, as compared with $278,348, or 59 cents per share, for the same period of 1929. Net operating profits for the period before charges and the addition of other income were $206,913, against $439,015 in 1929.

Traffic on the New York state barge canal for the season up to September 6 amounted to 2,555,608 tons, compared with 1,759,405 tons for the same period of 1929. The bulk of this gain was on the Erie division between Buffalo and the Hudson. The wheat movement has been much larger than in 1929. Ralph D. Hayes, commissioner of canals and waterways, states that if the tonnage record for the balance of the season maintains the 1929 level, 1930 will see all records broken, with a total commerce for the season of approximately 3,500,000 tons.

New River Towboat to Make History

Advanced Design Given Practical Test as Towboat Ohio Shows Power, Speed and Maneuverability on Trials

By W. G. Gude

A NEW unit destined to play an important part in writing a new chapter in river transportation gave her first public demonstration Sept. 17 when the 2000-horsepower twin screw steamer OHIO, built for the Mississippi Valley Barge line, by The Dravo Contracting Co., Pittsburgh, was taken on a trial trip down the Ohio river from Pittsburgh with a tow of six steel barges. A party of nearly one hundred, including industrial, financial, transportation and government officials, was the guest of the Dravo company on the 20-mile run.

One of the largest and most powerful boats ever built for inland service, the OHIO is a sister ship of three similar steamers being constructed for the Mississippi Valley Barge Line Co., the OHIO and TENNESSEE by Dravo and the INDIANA and LOUISIANA, by the Charles Ward Engineering Works, Charleston, W. Va. The two latter twin screw Westinghouse turbine electric propulsion machinery. Dravo also is building 50 steel barges to be used in conjunction with the four boats in regular service between Cincinnati and New Orleans. An article describing both the OHIO and INDIANA, in connection with their launching appeared in the July issue of MARINE REVIEW.

Modern in every respect from her twin screw propellers working in half tunnels and large unaflow steam engines to crew facilities the OHIO gave an impressive demonstration of her power, ease of maneuvering and speed on the trial trip. Fast time was made on the run from the Pittsburgh point to the Dravo Contracting Co. marine yards, about 8 miles down the Ohio river. The tow of barges was removed there and the OHIO proceeded several miles further downstream before returning to Pittsburgh. Lunch was served on board en route.

The OHIO, as well as the TENNESSEE, INDIANA and LOUISIANA, was designed by Cox & Stevens Briefly describing the boat's specifications, her hull, superstructure and decks are built of steel with a length of 200 feet. The molded breadth is 40 feet and draft 6½ feet. Gross tonnage is 913.6. The bow is of modified scow design. The screws are of the one-piece, four-blade, bull-nose type with diameter of 8 feet, 9 inches and pitch of 8 feet 6 inches. There

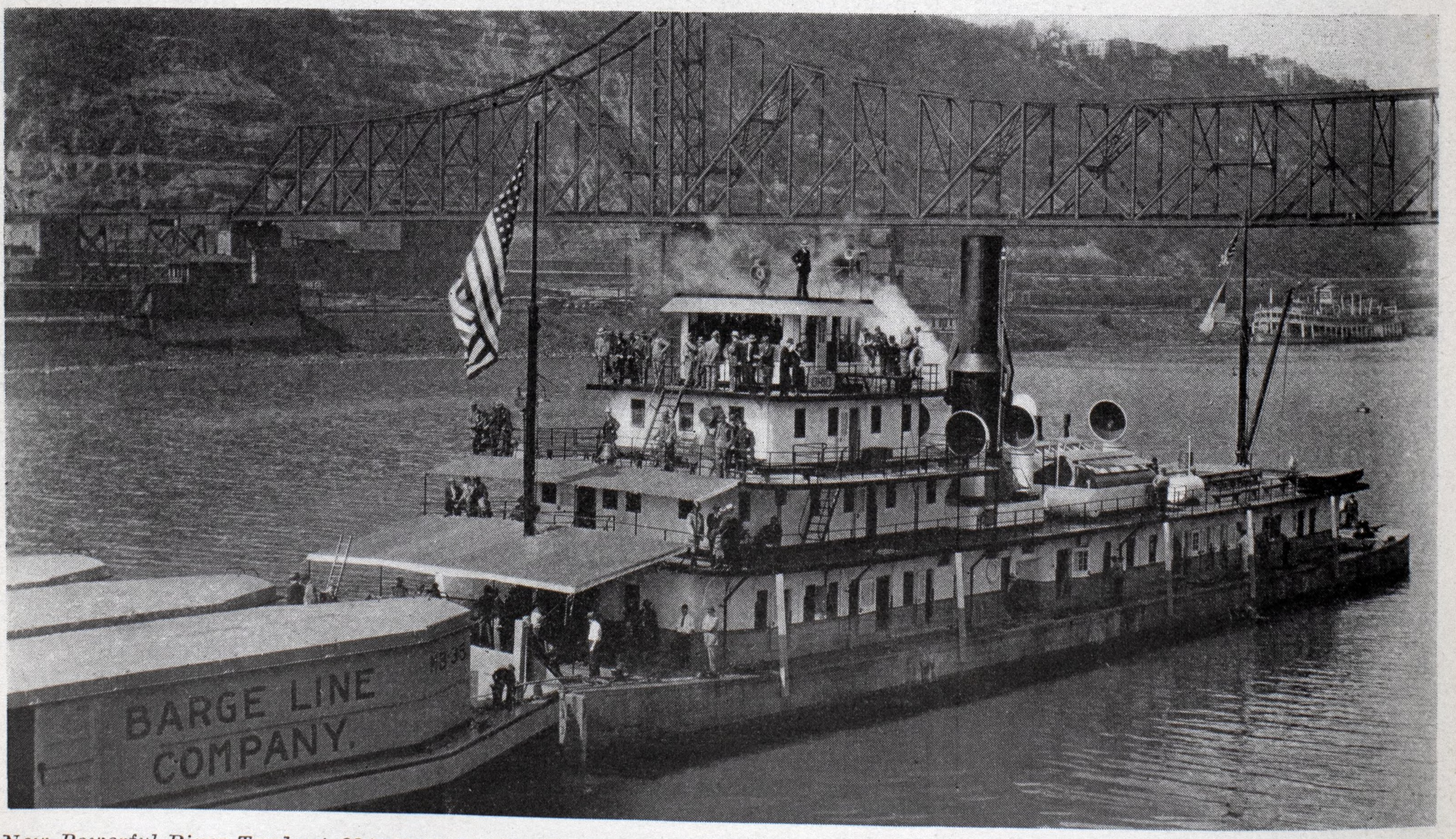
---

The author, W. G. Gude, representing MARINE REVIEW, attended the trial of the new tow boat OHIO, the advent of which is believed by many to be an epoch making event in the history of river transportation. This article presents a first hand, eyewitness account of this interesting practical demonstration of a bold departure from customary practice.

River Steamer Ohio

General Particulars

Owner	Mississippi Valley Barge Line Co.
Builder	The Dravo Contracting Co.
Naval Architect	Cox & Stevens
Launched	June 17, 1930
Completed	Sept. 17, 1930
Classification	American Bureau of Shipping
Length overall, feet, inches	201 0
Length between p.ps., feet, inches	200 0
Breadth, molded, feet, inches	40 0
Depth, molded, feet, inches	10 6
Draft, feet, inches	6 6
Displacement loaded, tons	1200
Gross tonnage	913.6
Net tonnage	416
Bunker fuel capacity, tons	200
Speed in statute miles per hour	10
Propellers, number, Erie Forge Co.	2
Main Drive, twin screw	Unaflow Steam Eng.
Main Drive builder	Skinner Engine Co.
Horsepower, total 2 engines @ 185 r.p.m.	2000
Boilers, watertube, two, oil burning Babcock & Wilcox	
Auxiliary Generators—Three, 65, 50, and 15 K.W.	Westinghouse Electric & Mfg. Co.
Pumps	Worthington Pump & Mach. Co.
Winches	American Engineering Co.
Steering Engine	Marietta Mfg. Co.
Refrigeration	York Ice Mach. Corp.



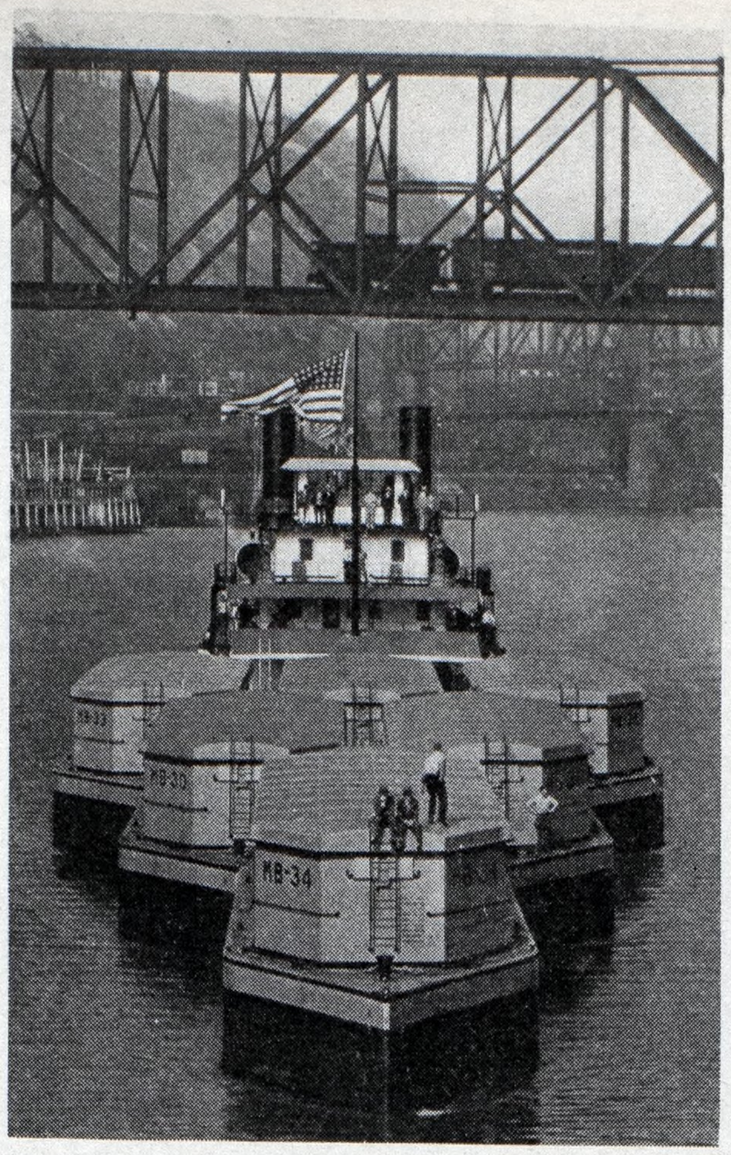
New Powerful River Towboat Ohio Built by The Dravo Contracting Co.—on Trial Trip Sept. 17—Near Pittsburgh. Her Tow Consists of Specially Designed Scows with Wedge Shaped Ends to Facilitate Nesting

are four rudders. The two aft rudders are operated independently from the two flanking or forward rudders. The hull is constructed with a continuous center line bulkhead and truss. Wing bulkheads form eight wing tank oil compartments. Water tight double bottoms are employed under the boiler room and engine room and there are six water tight transverse bulkheads.

One of the most interesting features of the OHIO is the power plant which consists of two vertical 3-cylinder unaflow engines of 1080 horsepower each at 185 revolutions per minute, built by the Skinner Engine Co., Erie, Pa. Cylinder diameter is 19 inches and the stroke 20 inches. These engines have the greatest capacity of any marine unaflow engine yet built and are the largest vertical unaflow engines ever constructed in this country. The engines are fully enclosed with force feed lubrication at 40 pounds pressure. They are rated at 1080 horsepower each, at 185 revolutions per minute. They operate condensing with a steam pressure of 250 pounds and 200 degrees superheat.

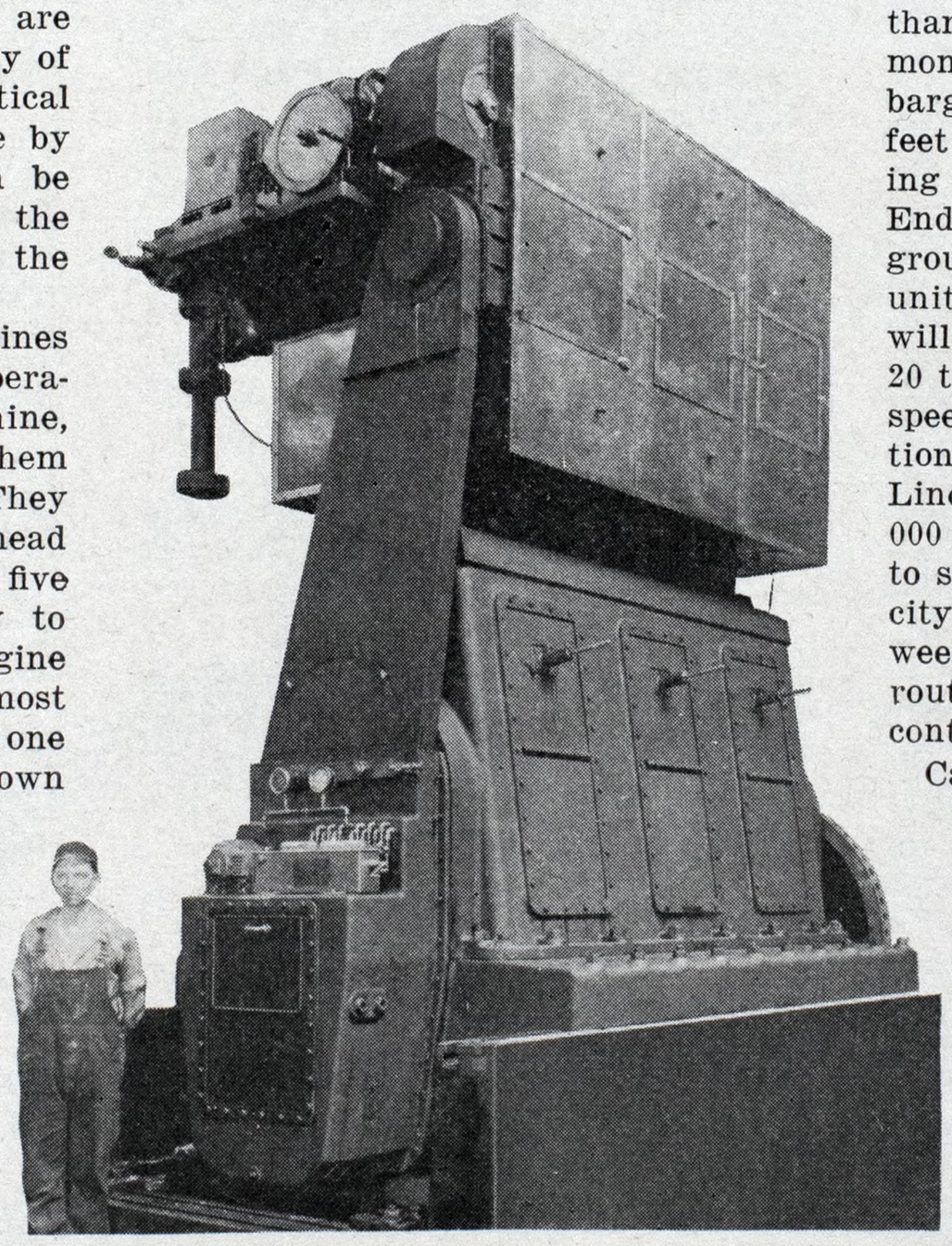
These engines have the Skinner steam type expansion compensating poppet valves, the same type of valve which has been used on approximately 1200 stationary steam engines of this kind. One of the outstanding features of the OHIO's unique propelling machinery is the simplicity of the valve and reversing gear. The usual Stephenson link operated valve seems complicated compared to this simple gear. Flat cams and flat rollers operate the valves. The bearings in this gear are lubricated under pressure and the cams and rollers are sprayed by oil jets. The simplicity of the gear permits the use of practical pilot house control of the engine by electric means. The engine can be controlled either electrically from the bridge or by manual operation in the engine room.

A notable feature of these engines is their apparently effortless operation; running like a sewing machine, comes to mind after having seen them in operation during a shop test. They can be reversed from full speed ahead to full speed astern in less than five seconds and it is not necessary to close the throttle or stop the engine during this maneuver. It is almost an instantaneous transition from one direction to another. As far as known these are the first marine steam engines of any type that can be controlled from the pilot house in stopping, starting, reversing or changing speed, all at the will of the man at the wheel in the pilot house. As a part of the forced lubrication system mentioned above, the engine frame has a dry sump, the oil being removed quickly from the engine to prevent its being heated to any great extent. After being cooled it is returned to again serve as a lubricant for the engine bearings. No entrained water can reach the interior of the crankcase or the valve gear case.



Towboat Ohio with nest of six special Barges—A larger tow in less space and better control is possible

The builder of these engines states that experience shows they can be operated under normal conditions for two years without keying up or adjusting any part. There was no opportunity at the trial for an observer to establish the fuel consumption. It is believed, however, that it will be favorable and much superior to customary river boat performance. An estimate might place it at about 0.9 pound of oil per horsepower hour for all purposes.



One of two 1000 *Horsepower Unaflow Engines in Towboat Ohio. Each Engine Direct Connected to Propellers*

The two oil burning watertube boilers, products of the Babcock & Wilcox Co., are of the watertube type operating at 260 pounds pressure with 200 degrees of superheat. Boiler control was furnished by the Hagan Corp., Pittsburgh, and the stack and feed water regulators by the Bailey Meter Co., Cleveland. Feed water heater equipment was manufactured by the Elliott Co., Jeannette, Pa. Condenser equipment, including a single pass condenser, was supplied by the Foster Wheeler Corp. The cast steel propellers, propeller shafting and bearings, were produced by the Erie Forge Co. Steam pumps are of Worthington Pump & Machinery Co. manufacture. The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., supplied the auxiliary electric machinery, including three turbo electric generators, of 65, 50 and 15 kilowatts capacity, engine control, fans, electric tachometers and floodlights.

Miscellaneous equipment includes a modern laundry, ice-making equipment, machine shop and segregated living quarters to give accommodations to four classifications of the crew, including senior officers, officers, white deck crew and colored crew.

Barges that will be employed on the Mississippi Valley line are of new design. Having an overall length of only 109 feet and width of 21 feet but with a fairly high deck house they are designed more for express service than are the larger barges now commonly used on the rivers. Each barge has a hold volume of 9300 cubic feet with the deck house accommodating an additional 9700 cubic feet. Ends are wedge shaped in order to group together a large number of units in one tow. For fast runs tows will consist of about ten barges, but 20 to 30 can be moved on hauls where speed is not an important consideration. The Mississippi Valley Barge Line Co. recently completed a $500,000 terminal at Cincinnati and plans to start a weekly service between that city and New Orleans within a few weeks. At present extension of the route up the Ohio to Pittsburgh is not contemplated.

Carl J. Baer, vice president of the Mississippi Valley Barge Line Co. and C. F. Jeffries, chief engineer, attended the OHIO's initial run. Representatives of the Dravo Contracting Co. included R. M. Dravo, vice president, and V. B. Edwards, vice president and general manager. A. D. Skinner, president of the Skinner Engine Co.; Stuart D. Brown, Babcock & Wilcox Co.; W. B. Bassett, Westinghouse, and H. E. Barrett, Cox & Stevens, were also on board.

Lighthouse Tender Violet Completed

Twin Screw Oil Burner Given Successful Sea Trials on Lake Michigan—Built at Manitowoc, Wis., for Service on Chesapeake Bay

By Ralph C. Smith

A NEW lighthouse tender, built specially for service in the upper waters of Chesapeake bay has recently been completed and turned over to the lighthouse service of the department of commerce. In order that this vessel may be able to operate in comparatively heavy ice in the winter months, she has been substantially constructed and provided with an ample margin of power. She is of light draft, for operation in shallow water, such as that prevailing in many parts of the Chesapeake, but is otherwise comparable with the largest tenders constructed for duty in outside waters.

This new tender, named the VIOLET, completed her official trials on Aug. 11, near Manitowoc, Wis., where she was built by the Manitowoc Shipbuilding Corp. performing in a manner satisfactory to the government's trial board. When loaded to her normal load draft of 8 feet 8 inches, fresh water, she developed an average speed of 13.19 statute miles when run twice over a 24 mile course in Lake Michigan. A full speed run was also made for six hours, all machinery performing in a satisfactory manner.

As an important part of the duties of a lighthouse tender consist of handling heavy weights, particularly the various types of buoys which must be placed and serviced, the derrick equipment received special attention. In the VIOLET, the derrick boom and mast has a lifting capacity of 20 tons, equal to that of the largest tender of the lighthouse service. This will enable her to handle the tail of the horseshoe gas and whistling buoy, which is 38 feet long and weighs nearly 20,000 pounds, a buoy of the largest type to be found in the fifth lighthouse district. The mast is of steel, "H" section, while the boom is built up of structural steel parts. A large buoy deck forward will accommodate two of the largest buoys or several of the smaller types.

The VIOLET has a length over all of 170 feet, a molded beam of 32 feet, and a displacement of about 810 tons. She has twin screws, these being four bladed, of 7 feet 3 inches diameter, and having a pitch of 10 feet 9 inches. The propellers have broad tips adding to the ease of maneuvering. Steam is provided by two water tube Babcock & Wilcox boilers, fitted with forced draft oil burners, equipment which is more suitable for shallow draft vessels such as this than the conventional scotch fire tube boilers burning either coal or oil. Twin triple expansion engines furnish a total of 975 horsepower, sufficient for a speed of 13 miles.

General Characteristics
Lighthouse Tender Violet

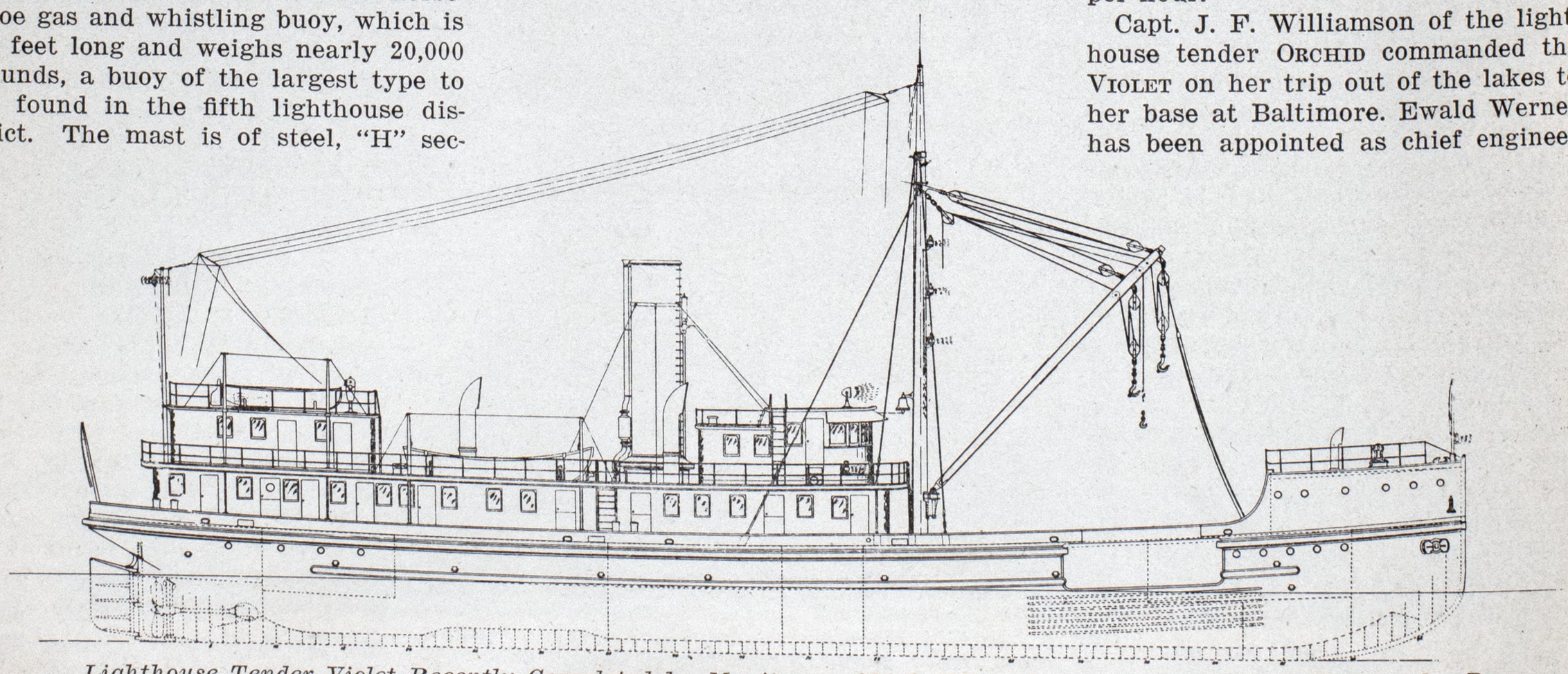
Twin Screw	Oil Burning
Owner	U. S. Bureau of Lighthouses
Builder	Manitowoc Shipbuilding Corp.
Naval Architect	U. S. L. H. S. Dept.
Launched	April 12, 1930
Completed	Aug. 22, 1930
Classification	Owner's Requirements
Length overall, feet, inches	170–0
Length between p.ps., feet, inches	163–6
Breadth molded, feet, inches	32–0
Depth molded, feet, inches	13–0
Draft, loaded, feet, inches	8–6
Displacement in salt water tons	770
Bunker fuel capacity, tons oil	100
Speed, statute miles per hour	13¼
Engines, steam reciprocating	2
Boilers, Babcock & Wilcox watertube	2

The main engines were built by the Manitowoc Shipbuilding Corp. and the cylinder diameters are 11½ x 19 x 32 inches and the stroke is 24 inches. The maximum indicated horsepower per engine at 200 pounds boiler pressure is 475. The boilers are of the following formula:

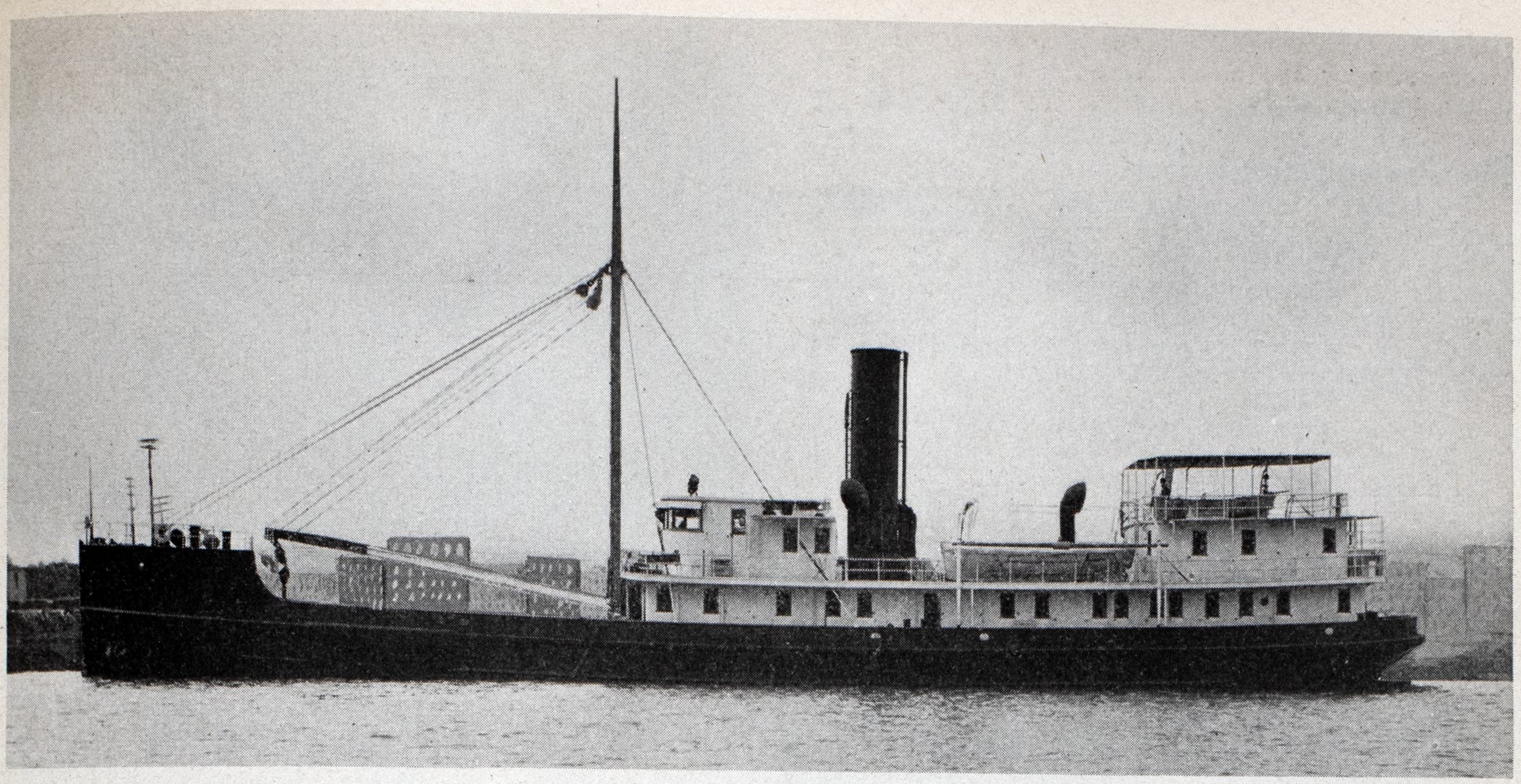
$$\frac{15}{36} \quad \frac{5\ (14\text{-}1)}{4 - 2} \quad 7'\text{-}6'' \quad \frac{0}{TS}$$

They operate at 200 pounds per square inch pressure. The total heating surface of the two boilers is 4880 square feet. Each boiler is fitted with two Mayflower type Babcock & Wilcox oil burners, and Schutte & Koerting equipment. These boilers are the first of this type to be installed on a ship. Sea trials held on Aug. 11 in Lake Michigan off the Wisconsin shore indicated satisfactory performance of the boilers. Average results obtained during the trial are tabulated separately for convenience. The boilers held steady steam during all of the trials and there was plenty of reserve when running at the full power rate. Later on when the VIOLET was making her voyage out of the lakes on Lake Erie full steam pressure of 200 pounds with safety valves lifting from time to time was maintained for 30 minutes. At this top steam pressure the port engine developed 146.1 revolutions per minute and the starboard engine 147.7 revolutions per minute. The average speed of the vessel for the 30 minutes was 11.92 knots or 13.8 statute miles per hour.

Capt. J. F. Williamson of the lighthouse tender ORCHID commanded the VIOLET on her trip out of the lakes to her base at Baltimore. Ewald Werner has been appointed as chief engineer



Lighthouse Tender Violet Recently Completed by Manitowoc Shipbuilding Corp. for Service on Chesapeake Bay



Lighthouse Tender Violet Preparing for Her 3000 Mile Voyage from Manitowoc, Wis., to Her Base at Baltimore

and acted in that capacity. She left Detroit at 8 a.m., Sept. 12 and after spending three hours at anchorage off Sandusky so that later on during the run observations could be made on the effect of air beacons on navigational lights, arrived in Buffalo 10:20a.m. Sept. 13. During the run from Detroit the average results were: Engine revolutions, 140; temperature of sea water, 68 degrees; temperature of discharge, 104; temperature of boiler feed water, 230 degrees; steam pressure, 175 pounds; oil pressure 125 to 150 pounds; pressure on blowers, 55 to 80, depending upon the auxiliaries in operation. The trial was attended by Mr. Gillette, chief engineer of the lighthouse bureau and Messrs. Hopkins and Hubbard respectively superintendents of the Baltimore and Milwaukee divisions of the lighthouse service. A. P. Rankin, chief engineer and vice president of the Manitowoc Shipbuilding Corp. represented the builder during the trials.

Everyone who has been on board is impressed with the orderliness and neatness of layout of the boiler and engine room on this vessel. The main engines operated even at top speeds without noise or vibration, giving the impression of perfect alignment and excellent workmanship throughout.

The new vessel has a capacity of 60 tons of cargo on her normal draft, but can carry from 40 to 50 tons more without reducing the freeboard beyond the danger point.

Hoister, and windlass of Hyde make; two auxiliary generating plants, built by Engberg and all pumps furnished by Worthington Pump & Machinery Corp. are steam driven Refrigerating machinery of Frigidaire make has been provided for the galley and scuttle-butt. Electricity is generated for lighting the ship and operating the radio. Anchors are stockless and hawse pipes are arranged "lake" fashion, so that anchors are housed almost flush. This arrangement is particularly advantageous when the tender is working around pierheads and close to other vessels. Anchor chain is of cast steel supplied by Natural Malleable & Steel Casting Co.

The hull has fairly fine lines, laid down with special attention to reducing resistance, making it possible for the new tender to attain the same speed as the two largest tenders in this district, with less horsepower. Her carrying capacity is greater than one of these large tenders, and almost as much as the other. The large cargo hold is immediately below the 30 by 40 foot cargo deck, forward. Forward of this are the forecastle deck houses windlasses, storerooms, paint locker, chain locker, etc.

Quarters are provided for 8 officers and 26 members of the crew, all officers above boatswain having separate staterooms. A saloon and two staterooms, one with connecting bath, is provided for the superintendent of lighthouses. The master's quarters are adjacent to the pilot house, and comprise office, stateroom, and private bath. All quarters are spacious, well lighted and ventilated.

Hull construction in the VIOLET is normal for a sea going vessel of this type. The keel is of the flat plate type, with vertical continuous inner keel and longitudinal keelsons and stringers. A continuous plate and angle shelf stringer is worked through the center length of the vessel and joins the partial lower deck at the ends. It is located in the region of the waterline, and serves to strengthen the shell at the point where ice pressure is received. The thickness of the outside plating is greater than that required by the rules for this type of vessel, but is necessary because of the great amount of work which the vessel will do in shallow water and the consequent frequent groundings.

Equipment on the VIOLET includes a 24-foot launch, a 24-foot cargo boat, a 16-foot dinghy, two 75-fathom 1¼-inch stud link chain cables and two stockless 1500 pound anchors, one 500 pound stream anchor, one 225 pound kedge anchor, and two floodlight-projector searchlights. The cost of the vessel when entirely completed was about $368,000, the contract price being $337,745.

The VIOLET was built specially for the fifth lighthouse district, the largest in the country, and the territory which she will cover includes Baltimore harbor and its approaches. She will replace the MAPLE, which will be sent to the lower part of the district, where ice conditions are not so severe; and will supplement the work of the two large tenders ORCHID and SPEEDWELL. A journey of about 3000 miles will be necessary before the VIOLET reaches Chesapeake bay from Lake Michigan, for her size necessi-

Lighthouse Tender Violet

Sea Trials Aug. 11, '30

Place.....Lake Michigan
Manitowoc to Sheboygan and Return

Average Results

Speed, miles	13.6
I.H.P.—Two engines	910
Revolutions estimated	145
Steam pressure at drum	193
Boilers in operation	2
Burners per boiler	2
Oil pressure	182
Oil temperature	154°
Feed temperature	140°
Draft—inches	17 to .33
Back pressure	1.3

tates her proceeding down the St. Lawrence river and along the coast to the Virginia capes.

Big Damage Suit is Lost

A decision of far-reaching importance was recently made by Judge Coleman in the United States district court for the southern district of New York. The case was the damage suit brought by numerous cargo owners against Ellerman's Wilson Line Ltd., as owner of the steamer GALILEE, and involved about $1,500,000. The Wilson line won the case.

In August, 1926, the GALILEE left New York for England with a full cargo but shortly after leaving was obliged to return to port because of fire in some bunker coal. The vessel was eventually flooded and sank at Weehawken flats, the vessel and cargo becoming a total loss.

Suit was instituted by the cargo owners on the theory, among others, that it was unsafe for a vessel to carry coal in a compartment, any part of which was formed by the use of a wooden bulkhead. Had the libelants succeeded in this contention, the result would have been disastrous to coal burning vessels as a majority of coal burning vessels would have been condemned as unseaworthy. Judge Coleman upheld the contentions of the respondents on most points.

At a joint meeting of executive members of the River Plate and Brazil conferences held Sept. 10 George H. Foley, who has been manager of the long voyage trades of the shipping board for the past 10 years was unanimously elected as permanent chairman of the two conferences.

Adopt Group Insurance Plan

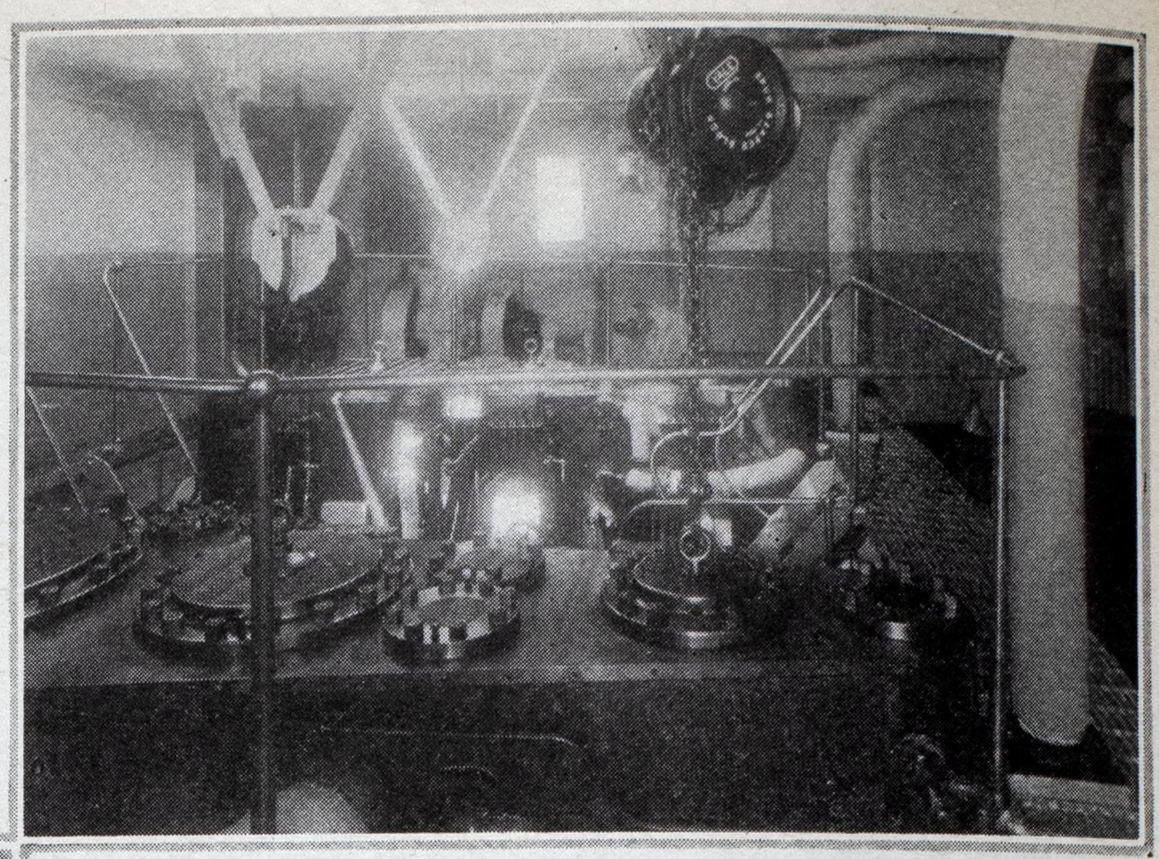
The United States Lines Operations, Inc., which operates the United States lines and the American Merchant lines, has adopted a co-operative plan to group life insurance totaling approximately $1,500,000 and including approximately 600 employees. The plan has been underwritten by The Travelers, Hartford, Conn.

The insurance ranges in amounts from $1000. to $10,000 and has been made available to salaried employees in the various offices of the company as well as practically all salaried employees engaged in sea-going services. The premium is divided between the employees and the United States Lines Operations, Inc. All employees are insured without medical examination and the policy includes a permanent and total disability clause.

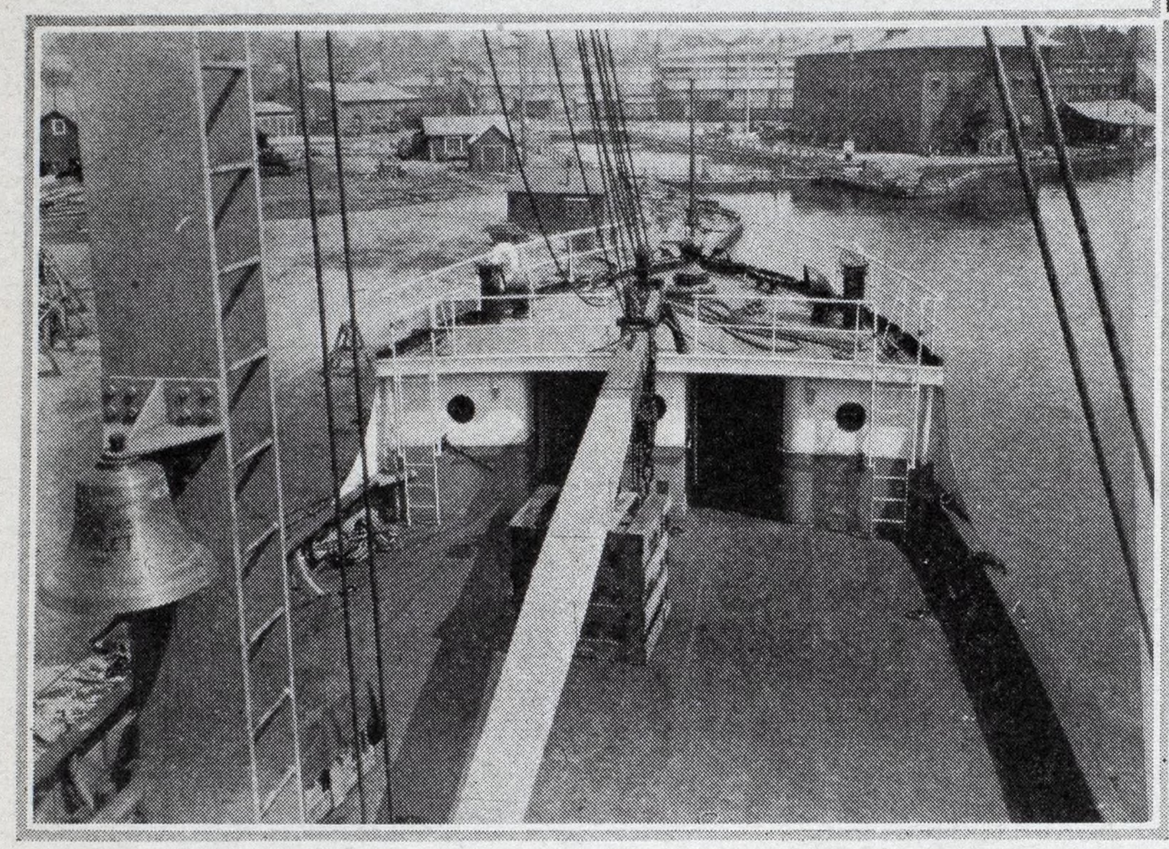
Ask Bids on Patrol Boats for U. S. Coast Guard

The United States coast guard has invited bids for building six or seven or eight special inshore patrol boats as described in the specifications dated September, 1930, and shown on design plan CG-91400. The bids for the construction of these patrol boats will be opened at 2:00 p.m. Oct. 28, 1930.

The first boat must be completed and delivered within 150 days after date of receipt of notice to proceed and the last boat must be completed and delivered 300 days after date of receipt of notice to proceed. General specifications and the arrangement plan for the boats may be obtained by motorboat builders and naval architects from the Commandant, United States coast guard, treasury department, Washington, D. C.



Engine Room of the Lighthouse Tender Violet—Looking to Port Two Triple Expansion Steam Engines — Boiler Pressure 200 Pounds — Maximum Revolutions 148



Forward Deck of the Violet Showing 20-Ton Boom Rigged for Lifting Heavy Buoys and Equipment for Light Stations. Open Deck Serves as Storage Space

The bidders' specifications and design plans must be prepared by a naval architect and the bidders must possess satisfactory financial resources competent technical organization and adequate plant facilities to assure full completion of boats in the contract time. Attention is invited to paragraph 16 to the standard government instructions to bidders.

Evaluation of bids based on speed guarantees will be in accordance with the specifications. No deposit for plans. Bid bond 25 per cent of bid. Performance bond 75 per cent of bid. Liquidated damages $100 per day per boat. Partial payments will be made.

Distribute Veco Products

Announcement is made that The Marr Brothers, Inc., have become distributors to the marine trade of the products of the Veco Mfg. Co., South Norwalk, Conn.

During the last decade the Veco company has developed and placed on the market a complete line of watertight and vapor proof lighting fixtures, wiring appliances, cargo lights, switches and receptacles, etc., all made of silicon-aluminum alloy. This new material is strong, noncorrosive nonmagnetic , is not affected by climatic conditions which includes salt water and salt atmosphere and has a natural and indestructible finish.

One of the recent Veco devices of particular interest to the electrical engineering force in charge of ship installations is a new type of junction box with knock-out holes threaded for standard pipe. The knock-out sections are of cast material and are thoroughly watertight. All boxes are drilled four way and can of course be used one way, if desired. This makes it possible to decrease the storeroom stock of junction boxes, as only one type need be carried on hand.

The shipping board on Sept. 3 approved the request of the United States lines to operate the steamer AMERICA in a special cruise from New York to Havana, Cuba, in December.

Large Tanker for Great Lakes Completed at Manitowoc

WHEN a yard builds a tanker it has added a good deal to its experience in shipbuilding. For the first time in its history the Manitowoc Shipbuilding Corp. has now turned out a large tanker in completing the EDWARD G. SEUBERT for the Standard Oil Co. of Indiana. On good authority the hull construction is of the highest quality and is fully comparable with the work done on tankers by any shipyard experienced in this particular kind of work.

The tanker SEUBERT is similar to, but larger than, the ROBERT W. STEWART for the same company which was completed by the American Ship Building Co. at the Lorain, O. yard on April 7, 1928. The ROBERT W. STEWART is 390 feet 5 inches in length overall, whereas the EDWARD G. SEUBERT is 400 feet 5 inches on the same dimensions. The cargo capacity of the latter is in the vicinity of 100,000 gallons more than that of the STEWART. The total trip capacity of the Standard Oil Co. of Indiana is now, with the addition of this new vessel, 9,321,780 gallons.

Isherwood System of Construction

The EDWARD G. SEUBERT was launched on July 2, 1930, the sponsor being Mrs. Edgar H. Scott, a sister of the president of the Standard Oil Co. of Indiana, Edward G. Seubert, after whom the vessel was named. The keel of the tanker was laid Dec. 20, 1929 and delivery was made Sept. 15, 1930. Sea trials were run on Sept. 11.

She is a single deck vessel constructed on the Isherwood system and has a straight stem and elliptical stern. She is a finely modeled and business-like looking tanker as may be noted from the accompanying illustration. The design and technical features were carried out under the supervision of N. J. Pluymert, naval architect, New York in consultation with officers of the Standard Oil Co. of Indiana. This vessel is similar in general features to all tankers with machinery aft and bridge forward. Finish of the quarters is all natural wood and plywood has been used extensively.

General particulars of the EDWARD G. SEUBERT are: Classification, American bureau of shipping—A-1E; length overall, 400 feet 5 inches; length between perpendiculars, 390 feet, 3 inches; breadth molded, 53 feet 3 inches; depth molded, 27 feet; draft loaded, 19 feet 6 inches; displacement loaded, 8640 long tons; gross tonnage, 4432; net tonnage, 2724. The cargo capacity is 2,100,000 United States gallons and the bunker fuel capacity is 336 long tons. Her speed is 14 statute miles per hour.

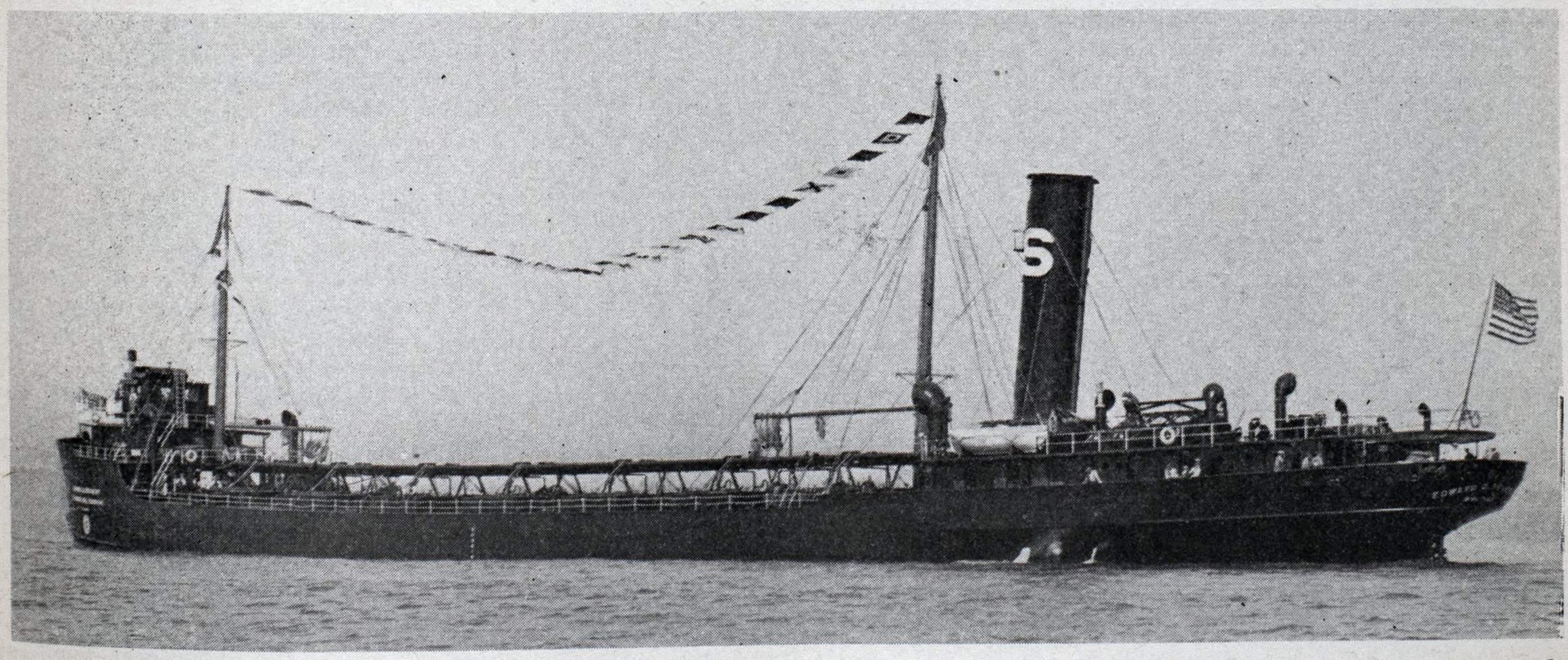
Propelling power is one triple expansion steam reciprocating engine of 23½ x 38 x 63 inches diameter cylinders and 42 inches stroke. The indicated horsepower at 96 revolutions per minute is 2500. Steam for this engine is supplied by two scotch type marine boilers, 15 feet 4½ inches in diameter and 11 feet 6 inches in length. Working steam pressure is 180 pounds per square inch and oil is used as fuel. Engine and boilers were built by the Manitowoc Shipbuilding Corp. It is interesting to note that the possibilities of burning coal have been taken into consideration in building this vessel. A shift from oil to coal can be made quickly and with little trouble.

The pump room is located forward. Aft of this room are the seven double main cargo tanks followed by a cofferdam space. Immediately aft of the cofferdam space is the fuel oil bunker and then the boiler room and engine room. A double bottom is fitted throughout the entire length. The fuel oil pumps were furnished by the Worthington Pump & Machinery Corp. and the cargo pumps by the National Transit Co. Miscellaneous pumps were supplied by Dean Bros. Co. The Manitowoc Shipbuilding Corp. built the winches, steering engine and propeller while the American Ship Building Co. supplied the windlass. The electric generators of steam reciprocating engine drive are of Engberg make. Oil burning equipment is the Todd system for marine installations. Refrigeration is of the Frigidaire type.

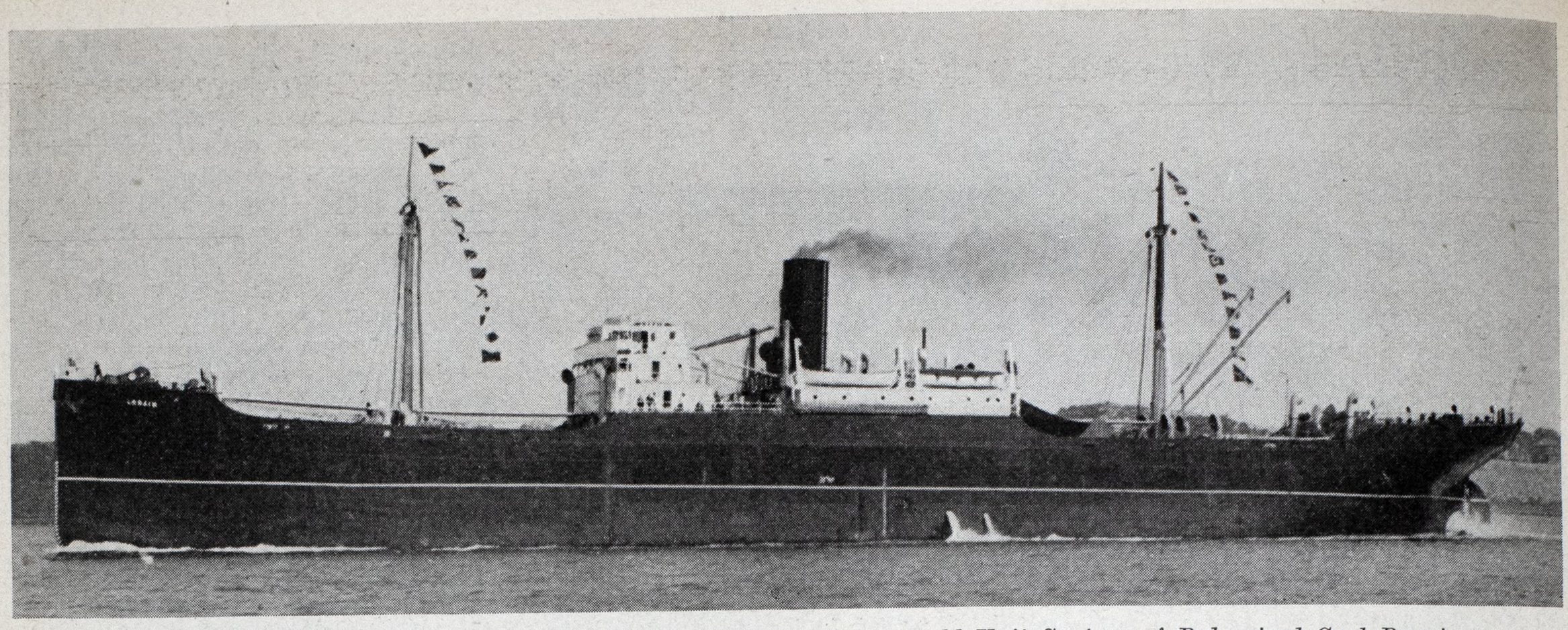
Modern Navigating Equipment

Navigating equipment of the EDWARD G. SEUBERT is complete. She has a hand sounding machine, a Sperry gyro compass with four repeaters, radio direction finder and electric whistle. Classification of the vessel calls for the carrying of petroleum in bulk on the Great Lakes. Much interest is being taken in the Oertz type of streamline rudder of latest design which has been fitted. It would seem, in comparison with the ROBERT W. STEWART and the respective powers of the two vessels and corresponding speeds, that the influence of the streamline rudder is definitely favorable.

A new standardized welded steel hull for power workboats has been announced by J. B. Lund's Sons, Cheboygan, Mich., shipwrights and shipbuilders. The hull has been designed particularly to meet the requirements for lake fishing boats and tugs.



Tanker Edward G. Seubert on Trial Run on Lake Michigan—Completed Sept. 15 by Manitowoc Shipbuilding Corp. for the Standard Oil Co. of Indiana—Single Screw—Steam Triple Expansion Reciprocating Engine



United States Shipping Board Steamship Lorain Fitted with the Todd Unit System of Pulverized Coal Burning

Pulverized Coal Trials of S.S. Lorain

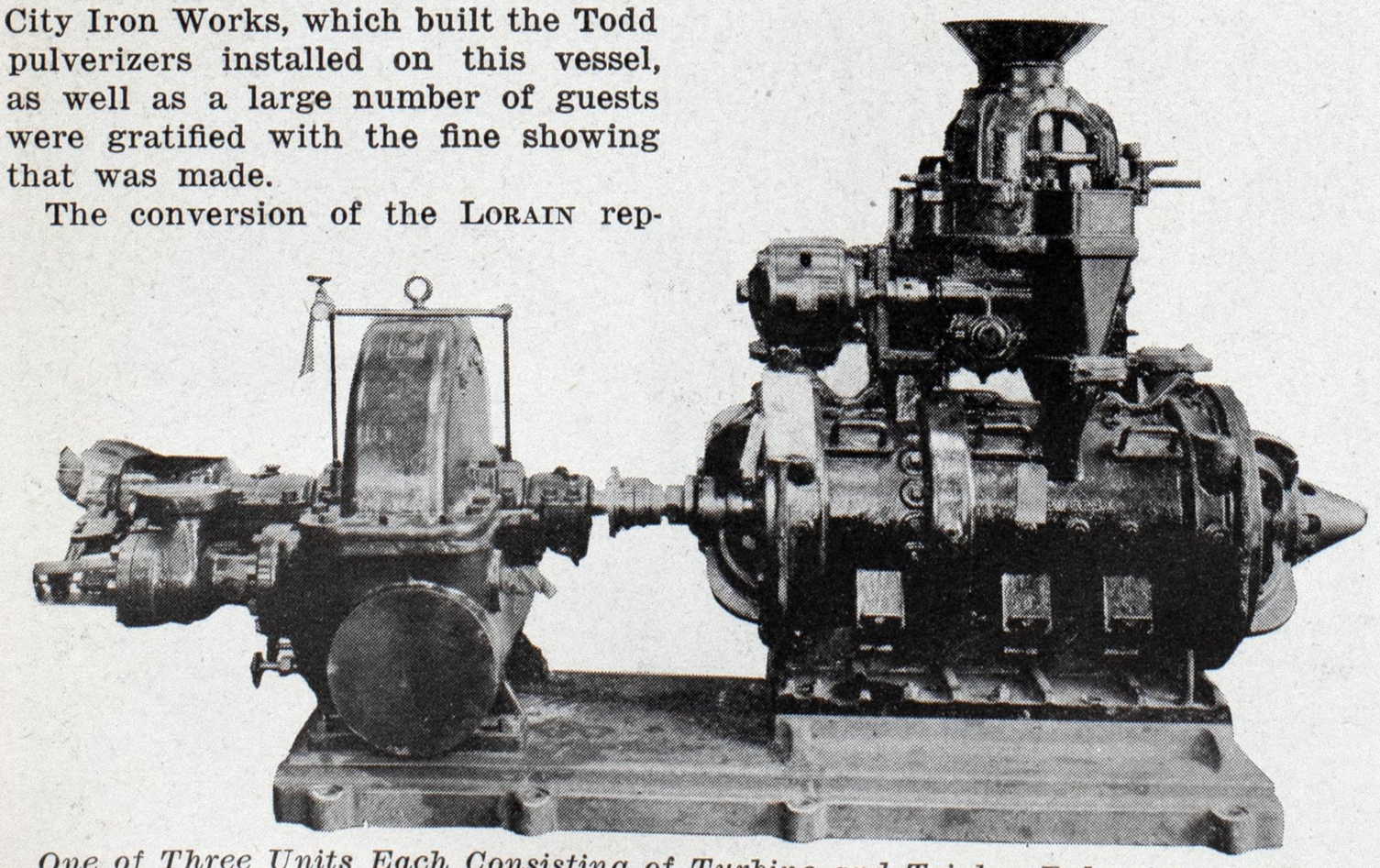
Unit System of Pulverized Fuel Installed on Shipping Board Freighter—Successful Sea Trials Meet All Tests Successfully

By E. C. Kreutzberg

THE S. S. LORAIN, third ship converted by the shipping board, in its efforts to develop the use of pulverized coal, received her sea trial Sept. 17. She started about 8:30 in the morning from the Brooklyn yard of the Todd Dry Dock Engineering & Repair Corp. where the work of conversion was done and steamed down the bay to the Ambrose lightship and then out along the Long Island coast, returning about 5 o'clock in the afternoon. The trial cruise was entirely uneventful which means that the performance of the vessel in every way came up to expectations. Representatives of the Merchant Fleet Corp., Todd Shipyards Corp. and the Erie City Iron Works, which built the Todd pulverizers installed on this vessel, as well as a large number of guests were gratified with the fine showing that was made.

The conversion of the LORAIN represented a vast improvement over the converted WEST ALSEK, which in turn represented a great improvement over the first vessel to be converted, the MERCER. On the WEST ALSEK, for instance, there was one turbine driving three individual pulverizing mills for each of the three boilers, making a total of nine mills and three turbines. In designing the equipment for the LORAIN, a way was found to combine the three individual mills for each boiler into one casing, with the result that the pulverizing equipment weighs less, requires less power to operate and takes up much less room.

Another remarkable feature of the LORAIN is the almost unbelievable simplicity in changing from pulverized coal to oil. The oil heating and pumping equipment used before the conversion has been left in place without change; the oil settling tank just forward of the fire room bulkhead was moved one frame space forward, allowing space to place the pulverizing mills so that the sized coal may flow by gravity from the service bin directly above the mills. This ship, therefore, is in a position to take advantage of the cheapest fuel market whether it be oil or coal. The only change necessary to revert to oil burning for full power is the placing of larger sprayer tips on the ignition burners. In the simplicity of the change from coal to oil or oil to coal, the LORAIN, is in striking contrast to other vessels in which such changes are accompanied by more complicated modifications in the equipment.



One of Three Units Each Consisting of Turbine and Triplex Pulverizing Mills, on the S. S. Lorain—Sea Trials on Sept. 17, 1930

Can Bunker Any Size Coal

The LORAIN has been fitted with a crusher so that when the ship reaches port, it can use coal in any sizes available. Coal is carried in 'tween decks. These spaces are filled through a coaling hatch just abaft of the stack on the boat deck and two hatches opposite No. 3 cargo hatch; No. 3 cargo hatch has been trunked to the upper deck and coal trunks provided on the outboard sides of this hatch so that both the 'tween deck spaces can be filled with a minimum of trimming. Grizzlies are fitted in the top of the service bin at the upper deck level so that small coal being fed to the

crusher, located just below, will fall by gravity into the service bin. A grizzly with 6-inch squares is fitted at the same level through which lump coal must pass through the crusher. There are no elevators or conveyors as this entire arrangement permits the downward flow of coal throughout the process of bunkering, trimming and coal feeding to the pulverizers.

Run for some time in the service of the America-France line, the LORAIN is a 9759 deadweight tonnage freighter built for the shipping board in 1919 by the Federal Shipbuilding Co. Her particulars are as follows:

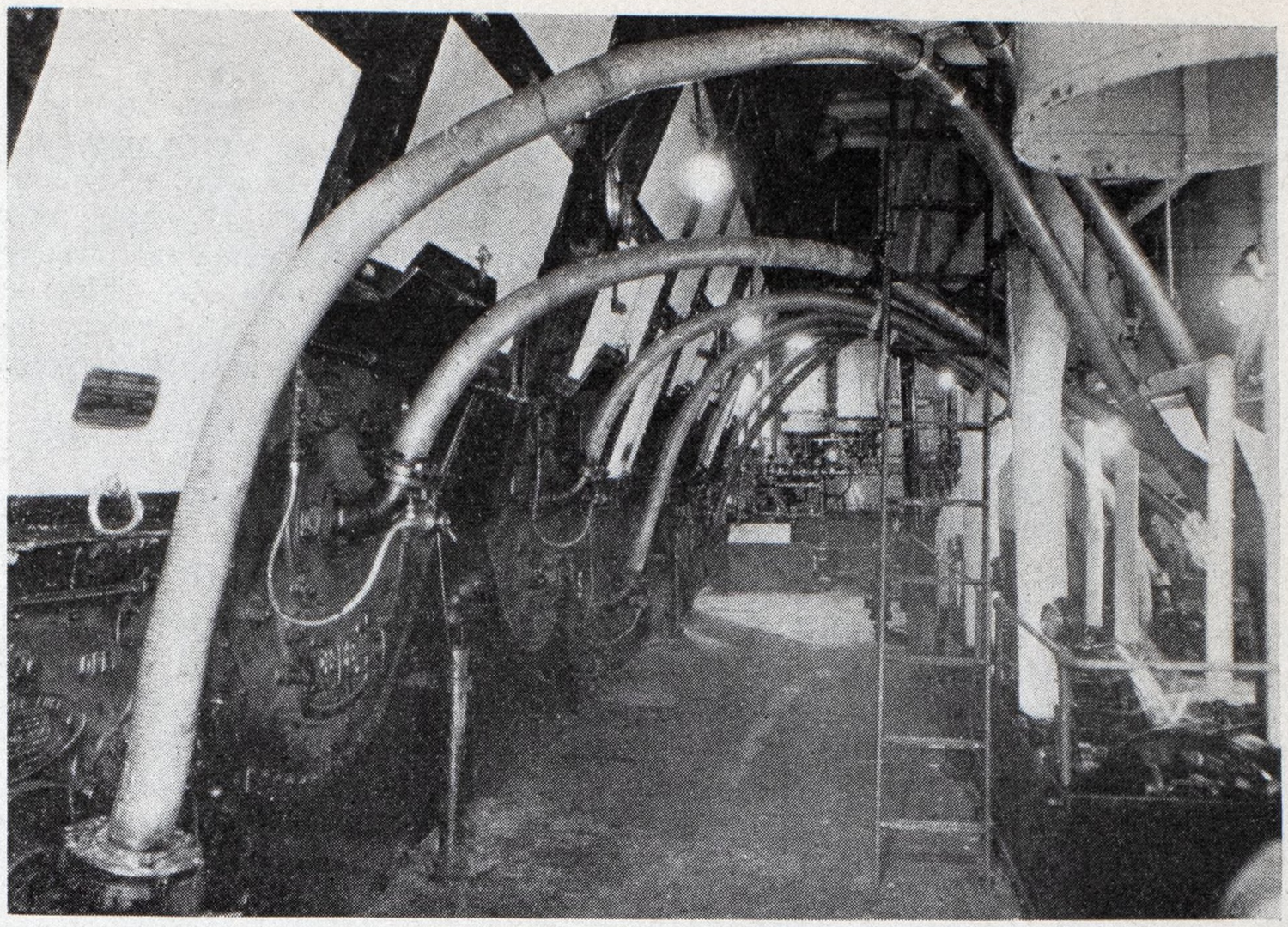
Length between pps. feet	395.6
Beam molded, feet	55.0
Depth molded, feet	34.11
Loaded draft, feet	27.04
Deadweight, tons	9759
Normal sea speed, knots	10.5

While in general the pulverizing equipment on the MERCER was regarded as encouraging, it had some objectionable features. One of them was the presence of a good deal of coal dust in the boiler room and the furnace feed and combustion were not entirely satisfactory in all details. The WEST ALSEK installation represented a great improvement and while coal dust was practically eliminated, the furnace room was cramped and not sufficiently well ventilated. The general performance also was affected somewhat by the fact that the WEST ALSEK had a twisted hull. The LORAIN, in addition to benefitting from the improvements in pulverizing equipment is a fine roomy boat with good engine room ventilation and well adapted for bunkering. The operation during the sea trial amply demonstrated that the Todd pulverizing mills are so self-contained that no coal dust whatever escapes. Combustion is so efficient as to be nearly up to the maximum.

Fires Can be Readily Controlled

Three hot air forced draft feed tubes supplies the dry pulverized coal to each of the three batteries of the furnaces. Anyone of these batteries, or all of them, may be shut down at any time so that no more steam is generated than is required at any given time.

The LORAIN is equipped with three single-end scotch marine boilers with three furnaces in each boiler. The working steam pressure is 210 pounds gage. The pulverized coal burning equipment was supplied and installed by the Todd Dry Dock Engineering & Repair Corp., Brooklyn. The system consists of three triplex pulverizing mills each driven by one 30-horsepower steam turbine. There are nine model S Todd furnace fronts with coal burners and oil ignition burners and nine lengths of 4-inch flexible steel hose connecting mills to coal burners. Three smoke detectors are installed and there are nine CO_2 connections for gas sampling. Nine thermo-couples are connected to a nine point selector switch voltmeter. Also draft gages, pressure gages, special tools have been supplied.



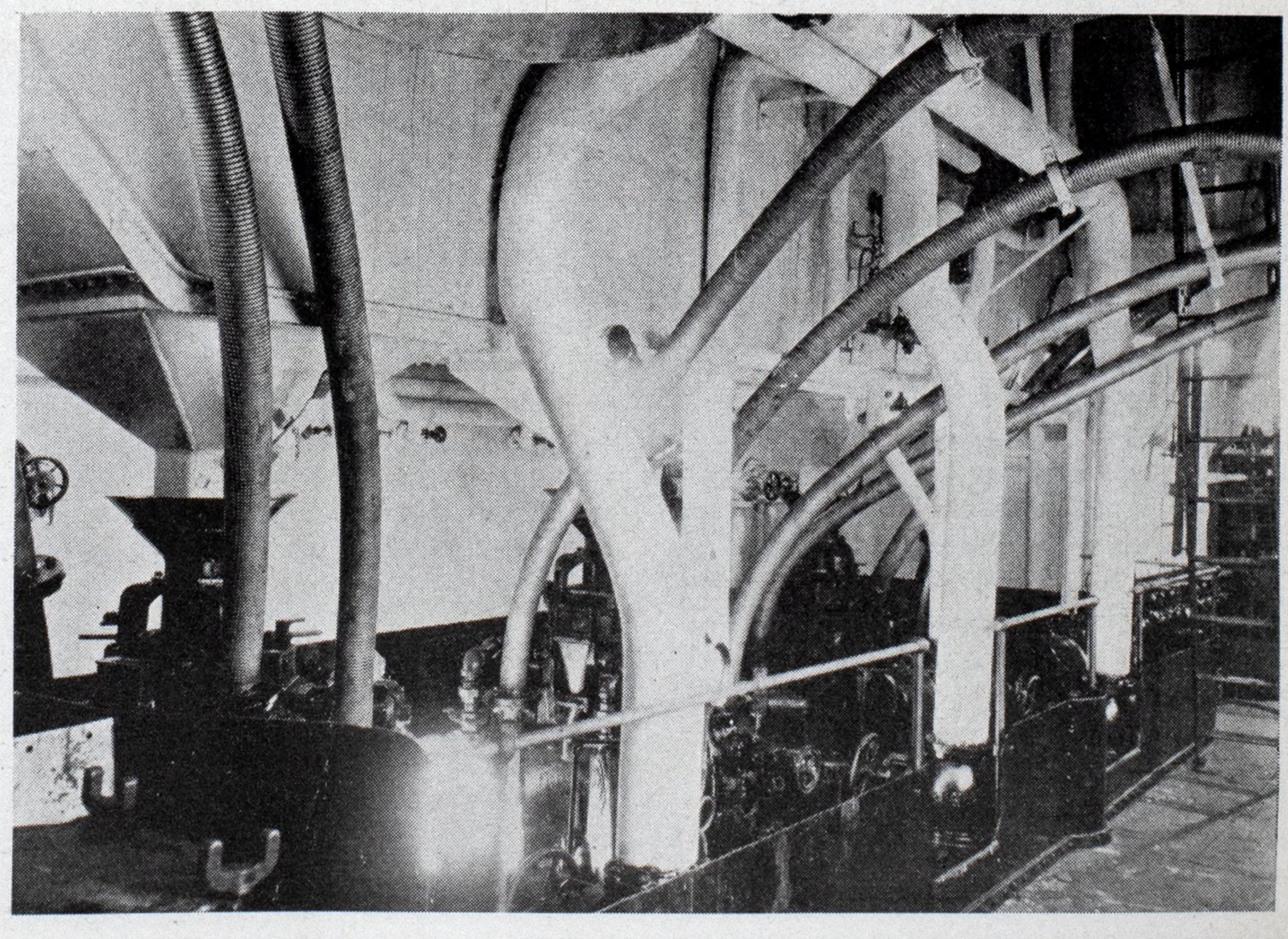
Fireroom of the S. S. Lorain Showing the Todd Pulverized Fuel Burning System

The coal bunkering equipment furnished includes, one coal crusher of 12 tons per hour capacity, with tramp iron pocket; one steam turbine of 15 horsepower to drive crusher; and one speed reduction gear installed between turbine and crusher.

Granted American License for Weir and Contra-Flo Products

The Barnett Foundry & Machine Co., Irvington, N. J., recently obtained the American license for the manufacture and sale of products of G. & J. Weir, Ltd., Cathcart, Glasgow, including Weir pumps, feed regulators, Drysdals equipment and the products of the Contra-Flo company of London. This equipment will be handled under the name of American-Weir products.

Gerald Hanney, one of the primary parties to the new American license agreement, is general manager and principal stockholder of the Barnett company. K. Warren Heinrich, retired naval constructor, U. S. N., and well known in the marine industry, is in active charge. He will be assisted by William Mulheron, in charge of marine sales. Mr. Mulheron was formerly with the marine sales division of the Bethlehem corporation handling Dahl burners and diesel engine sales, and previous to that served in the marine department of the General Electric Co. at Schenectady and as assistant chief engineer for the Merchant Shipbuilding Co. Chester, Pa. He will be assisted by William Clarkin, formerly with the Worthington Pump Co.

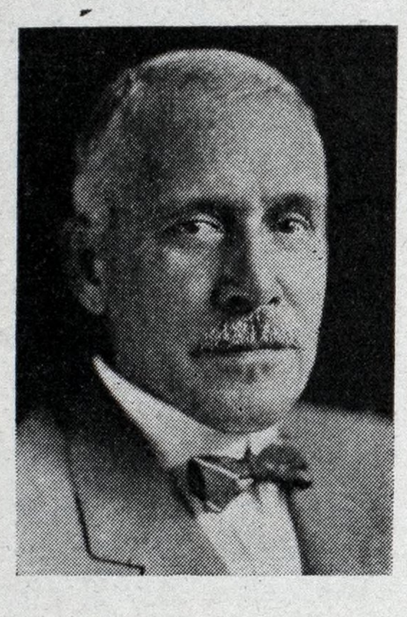


Coal Pulverizers on the S. S. Lorain Located under Bunkers to Allow Gravity Feed

Appointment of High Rank Given to Naval Officer

ADMIRAL William V. Pratt was recently appointed chief of naval operations, effective Sept. 18, to relieve Admiral Charles F. Hughes. Admiral Pratt has had a colorful career in the navy and his activities have embraced a wide field. He graduated from the United States Naval Academy in 1889 and on July 1, 1891 he became an ensign and was promoted through grades to rear admiral on June 3, 1921.

He began his career with service on the ATLANTA and CHICAGO in the White squadron in 1889, serving subsequently in various fleets and stations, including duty on the MAYFLOWER during the Spanish-American war in 1898 and duty in the office of chief of naval operations, navy department, Washington, during the World war. He acted as assistant chief of naval operations from August 1917 to January 1919 and accompanied President Wilson on his trip to France in December 1918. From 1921 to 1923 he was on duty with the general board, United States navy, acting as naval expert assistant to the American commission at the conference on limitation of armaments in 1921-22. After serving as president of the naval war college from 1925 to 1927 he was appointed commander of battleship divisions, battle fleet, with rank of vice-admiral in September 1927. His decorations include service medals of the Spanish-American war, Philippine insurrection, Boxer insurrection, D. S. M., navy and army, Legion of Honor (France) and Order of Al Merite (Chile).



Wm. V. Pratt

Failure of Contract Speeds

The motorships SUD EXPRESSO and SUD AMERICANO of the Linea Sud Americana operated by Garcia & Diaz in the New York-River plate trade were recently returned to their builders, the Deutsche Werke of Kiel, in accordance with a judgement obtained by the owner, Ivar An. Christensen of Oslo, because of failure of the vessels to maintain the speeds contracted for.

The two vessels, which were delivered last year, attracted a great deal of attention as the fastest cargo liners in the world when they developed a speed of 18.1 knots on their trial runs. The propulsion plant in each consists of twin two-cycle, double-acting Deutsche Werke diesel engines developing 10,400 indicated horsepower.

When the ships failed to maintain the contract speed, the owners brought suit against the builders asking for a refund of the installments already paid. The court recently delivered judgement in favor of the owners, who have consequently placed the vessels at the disposal of the builders.

Load Line Regulations Put Maximum Safety on Ships

THE new United States load line regulations, approved by congress on March 2, 1929 and affecting all merchant vessels of 250 gross tons or over when engaged in a foreign voyage by sea, went into effect on Sept. 2. These regulations do not apply to vessels trading either domestic or foreign on the Great Lakes nor to vessels in the coastwise trade of the United States. They apply only to vessels engaged in the foreign trade. The new rules coincide in the main, with only such exceptions as our different conditions demand, to the international load line convention held in London on July 5. Printed copies of the load line regulations have just been issued by the department of commerce, bureau of navigation. Separate chapters are devoted to general rules for determining maximum load lines of merchant ships, conditions of assignment of load lines, load lines for steamers, for sailing ships, for steamers carrying timber deck cargoes, tankers and load lines marks for vessels specially constructed for the carriage of complete cargoes of timber (lumber-schooner type). A map in colors on zones and seasonal areas is included in the book, as well as formulae for determining the freeboard of ships.

The secretary of commerce is directed to define load lines and indicate the maximum depth in which ocean-going vessels may be loaded safely. He may exempt foreign vessels already complying with load line laws similar to the present American statute. The American Bureau of Shipping is officially assigned as the authority of load lines and all applications must be made to this bureau. About 1800 vessels under the American flag are affected and the majority of their owners have already filed applications with the bureau. Load lines will be assigned in the order of applications received. The new law also provides for annual load line inspection by the bureau. Heavy penalties are stipulated for violation of the new regulations or for alteration or obliteration of the load line marks.

The international load lines convention which was approved by most of the maritime nations at the London conference has yet to receive the approval of the United States congress. A report on this law is now in the hands of President Hoover.

Signal Success Crowned Life of E. P. Morse

NEWS of the death of E. P. Morse, retired president of the United Dry Docks Inc., was received just as the September issue of MARINE REVIEW was put on the press and therefore only brief mention of the fact was possible.

A review of Mr. Morse's life is an inspiration to all and the qualities which characterized his career are worthy of emulation. During the short span of 50 years he rose from a poor young man with little training to the head of a ship repairing organization recognized throughout the world for its efficient and varied facilities. Through his undaunted spirit, determination, honesty and fairmindedness he endeared himself to those whom he came in contact.

E. P. Morse

Mr. Morse was born in Nova Scotia in 1859 and left his home as a young man for New York, where he began work in a ship repair plant. In 1884 he bought the branch plant of Jones & Lewis, foot of Twenty-sixth street, Brooklyn, and in 1890 leased a warehouse from the Brooklyn Dry Dock Co., known as the Morse Iron Works. Six years later he bought his first dry dock and the name of the company was changed to Morse Dry Dock & Repair Co., Brooklyn. Mr. Morse was president of this company for 45 years until it was absorbed by United Dry Docks Inc. in 1929. In February, 1930, he retired as president and became chairman of the board.

Many serious setbacks were thrown across his path before Mr. Morse achieved his signal success. His first plant was only about 20 by 40 feet overall and he rented dilapidated old dry docks, lightered material and worked day and night. A disastrous fire in 1890 wiped him out completely but he started all over again.

Mr. Morse died while supervising the construction of a $250,000 home at Digby Gut, Nova Scotia, having returned to his native soil laden with riches and distinction. His fortune is estimated at $40,000,000. His death is deplored throughout the marine industry.

Examination Announced

The United States civil service commission announces an open competitive examination for Junior Scientist

(nautical). Applications must be on file with the commission, Washington, D. C., not later than Oct. 21, 1930.

The examination is to fill vacancies in the hydrographic office of the navy department for duty in Washington, D. C. The entrance salary is $2,000 a year. Higher-salaried positions are filled through promotion. Competitors will be rated on the subjects of pure mathematics, navigation, theory and practice, physical geography, nautical definitions, and seamanship. Applicants must have been graduated from the U. S. Naval academy, from the U. S. Coast Guard academy, from an approved technical college, or from a scientific college of recognized standing with major courses in mathematics and physical sciences, or must have had certain other specified training and experience.

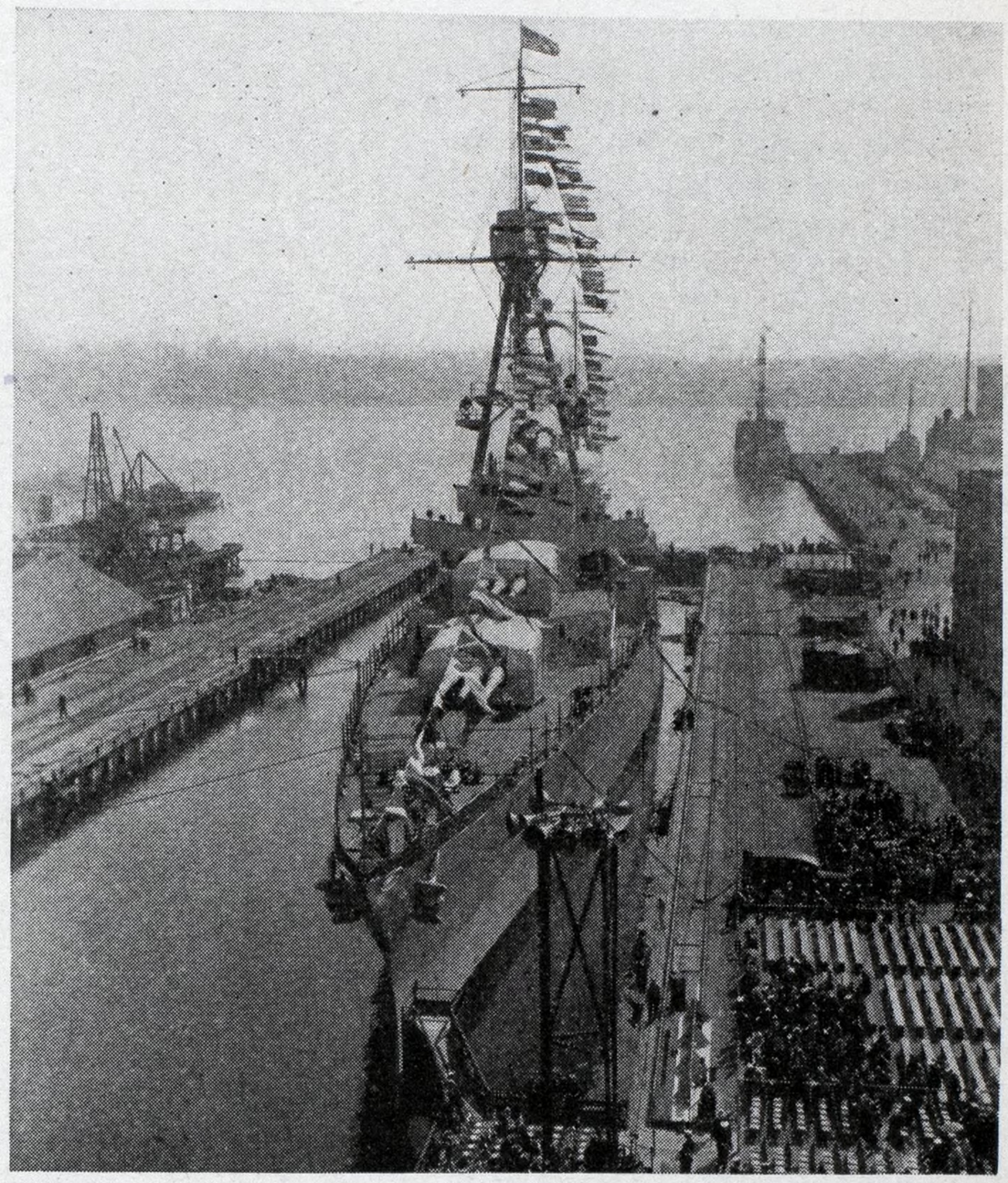
Race Trophy is Awarded

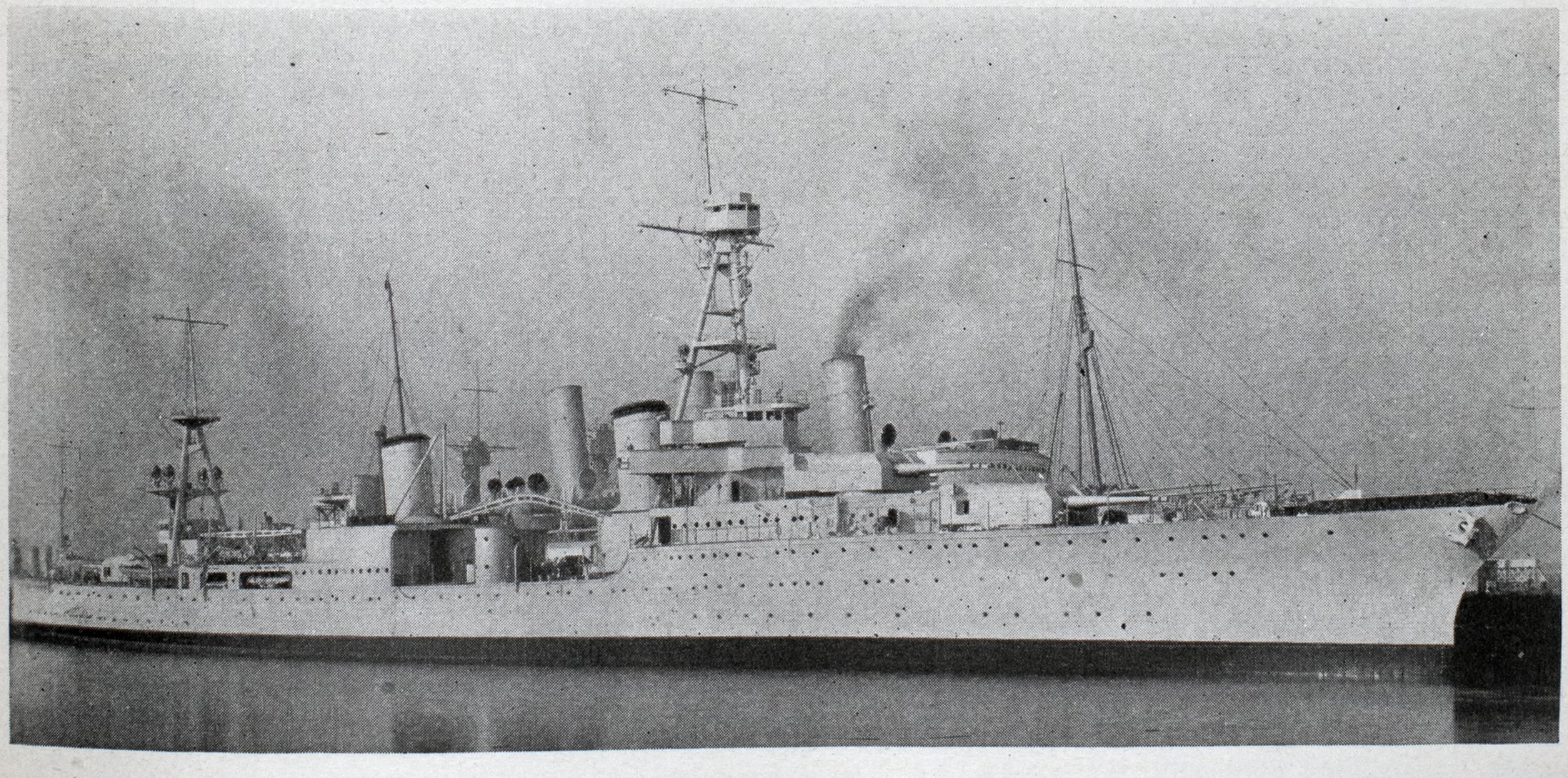
The Todd lifeboat race trophy, won by a crew from the Norwegian American liner STAVANGERFJORD in the annual Labor Day race on the Hudson river, was presented to officials of the line on board the STAVANGERFJORD at the foot of 30th street, Brooklyn, recently. The winning crew won first place by 45 seconds from the crew of the SUD AFRICANO. The MAURETANIA lifeboat finished third and the EXTAVIA fourth. The trophy must be won three times for permanent possession. It has been won twice by LINEA SUD AMERICANA crews and once by a crew from the MAURETANIA of the Cunard line. The race is sponsored by the Neptune association of which J. F. Milliken is secretary and treasurer.

Cruiser Louisville Launched at Puget Sound Navy Yard

THE light cruiser LOUISVILLE was launched (undocked) from shipbuilding dock No. 3 at the United States navy yard, Puget Sound, Bremerton, Wash. Sept. 1, 1930. The sponsor was Miss Jane Brown Kennedy of Louisville, Ky. A bottle of spring water from Hodgenville, Ky., the birthplace of Abraham Lincoln, was used in the ceremony which was attended by a large assembly of persons prominent in official and private life. The vessel as a whole was 90.9 per cent completed at the time of undocking. A keel laying ceremony for the U. S. S. ASTORIA took place on the same day.

The principle dimensions of the LOUISVILLE are: Length over all, 600 feet, 3⅜ inches; length between perpendiculars 582 feet; breadth molded, 60 feet, 10 inches; breadth extreme, 66 feet, 11⅞ inches; depth amidship at side, molded, 35 feet, 11⅞ inches; and displacement from recorded draft, 8640 tons. The commandant of the navy yard at Puget Sound is H. J. Ziegemeier, rear admiral, U. S. N.





New Terminal Dedicated and Barge Line Gets Under Way

CARL BAER, St. Louis, vice president of Mississippi Valley Barge line which will operate between New Orleans and points on the Ohio and upper Mississippi rivers recently visited New Orleans to make arrangements for terminal facilities for the vessels of his line. At a luncheon of the foreign trade bureau of the Association of Commerce, which was attended by port commission officials, Mr. Baer announced that a six day freight service between New Orleans and Cincinnati will be one of the features of his line. Through routes and joint rail-barge rates will be maintained. Sailings from Cincinnati to New Orleans are scheduled on Sept. 27 and Oct. 15 and regular weekly service will begin about Nov. 1.

Two tow boats of 2,000 horsepower each, have already been launched, and two boats of a similar type are now being constructed, and will be ready when the line begins operations. In connection with these tow boats, the company will add 50 barges of 300 tons capacity each. It also has six 175-ton barges.

The equipment, including the $500,000 terminal at Cincinnati formally dedicated on Sept. 25 will represent an investment of approximately $3,500,000.

The barges are of a new design with pointed ends so as to ensure speed. They can be linked together for mass towing, facilitating heavy freight movements. It is the purpose of the company to serve the entire Mississippi valley with barges and the trade routes will be extended as the business grows.

Steamboat Inspection Staff Is Increased in Number

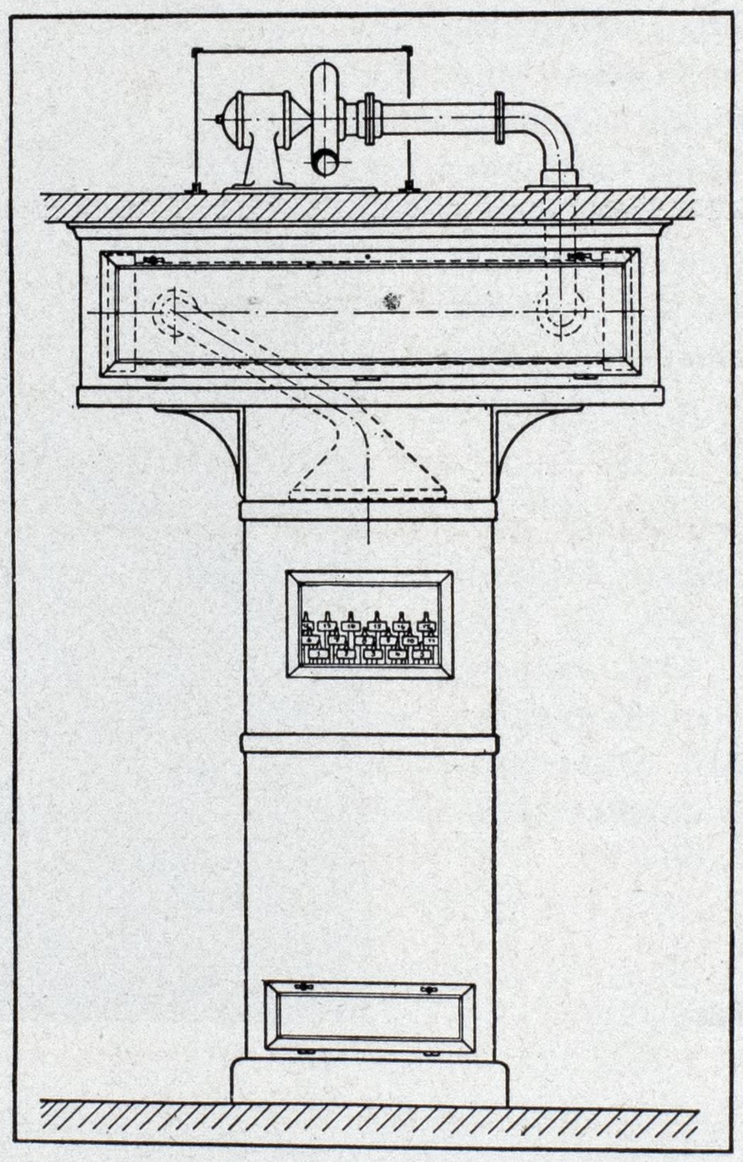
TO PROVIDE more frequent inspection of steam vessels on all United States waters, 45 additional assistant inspectors have been added to the force of the steamboat inspection service, according to announcement made Sept. 6 by Dickerson N. Hoover.

Addition of these men will permit three reinspections of class of vessels which formerly, because of limited personnel, received only the annual inspection. More frequent inspections will cover all American and foreign passenger vessels, the latter whether under reciprocity or not, during the season of navigation of the year for which certificated, in addition to the annual inspection each year. Inspectors will see that a thorough examination of each ship is made, particularly to see that all equipment is in good condition and ready for immediate use. Launching and handling of lifeboats will be especially stressed, as well as the ability of the crew in pulling the oars.

Ray P. Tarbell, formerly Cleveland district sales manager of the Lincoln Electric Co., recently became a member of the firm of Robert E. Kinkead, Inc., consulting welding engineers, Cleveland. Mr. Tarbell will act as vice president and secretary, Robert E. Kinkead Inc., serve as welding engineering consultants.

Automatic Smoke Detector Signals by Sound

ON BOARD of the larger freight and passenger vessels smoke detecting cabinets are now found in general use. These cabinets, of which there exist different systems, are so constructed, that a fan draws air from all holds of the vessel by means of



Smoke Detecting Cabinet with Automatic Signalling Device on Top

pipes. All these pipes end in the cabinet which has glass walls. If smoke comes into the cabinet through one of the pipes, it is made visible by mirrors and lamps, so that it is possible to detect easily, from which hold the smoke comes. In order to make such cabinets effective, they must be carefully watched and for this reason they are placed in the pilot house. Even this is not an absolute precaution, because the apparatus is not automatic.

As recent experience has again demonstrated that it is of utmost importance to detect a fire as early as possible, a new device has been practically developed by the Hamburg firm of Messrs. Rudolph Otto Meyer, who also manufacture a smoke detecting cabinet. This new device makes the smoke detecting cabinet automatic.

Air which contains only a very little smoke is a much poorer conduction of heat than clear air. This fact is used for the construction of the apparatus. In a short tube of good diameter there is arranged a longitudinal diaphram, by which it is divided into two chambers. The air coming from the smoke detecting cabinet is drawn through one of these chambers while the other contains nonmoving air. At its one end the tube is shut up by a hollow mirror in the focus of which is placed an electric lamp, right in the partition wall of the chambers. The heat rays emanating from this light are reflected parallelly through the tube and fall at its other end upon the ray receivers. These receivers are electric resistances, which are very sensitive to temperature. They are switched into a Wheatstone bridge system in the bridge connection of which there is provided a relay. If only clear air is drawn through the chamber connected with the cabinet, the two ray receivers get an equal amount of heat and have the same temperature, so that the Wheatstone bridge is balanced and no current flows through the relay. If however smoke is drawn through the chamber the temperature of the one ray receiver falls and the relay shuts up an amplifier which in its turn actuates a light and a sound signal.

In general this automatic smoke detecting device is arranged upon the cabinet. The fan draws the air through the tube from the cabinet, creating in the cabinet a partial vacuum into which the pipes from the holds exhaust.

If the alarm of the apparatus is noted, the individual hold, in which fire has broken out, may be easily ascertained with the help of the cabinet. The automatic device may however also be used for this purpose, if a special pipe switching arrangement is provided which allows the detector to be connected with one hold pipe after the other. This may be done without interrupting the fan's suction at the other pipes. It is sufficient to test each pipe line for about 11 seconds.

Authorize Sale of Line

The United States shipping board on Sept. 17 approved the recommendation of the Merchant Fleet Corp. and authorized the sale of the American Brazil line, together with the steamers BANGU, BERURY and BIBOCO at $4 per deadweight ton on certain terms and conditions, subject to the purchaser entering into the usual contract, outlining the usual conditions and governing terms of payment, repair obligations, bond, insurance requirements, etc. The terms of this award obligate the purchasers to operate these vessels from New York, Philadelphia, Savannah and/or Jacksonville to ports in Brazil within the Para-Victoria range for a period of five years.

Gears Show Little Wear After a Million Miles

THE spectacular transatlantic steamship speed records established during the past year have been made by vessels equipped with steam turbines driving the propellers through mechanical speed reducing gears. Because of the high speeds of these vessels, the gears are of the single reduction type, which provides a suitable turbine speed where the propeller speed is 150 revolutions per minute, or over.

Equally notable, however, since durability and efficiency are prime requisites of marine propelling equipment, have been the performances of a number of American vessels equipped with double reduction gears, as for example, the S. S. MUNARGO, operated by the Munson Steamship line, mainly on the New York-Nassau-Havana-Miami route. This ship, which was launched by the New York Shipbuilding Co., Camden, N. J., in December, 1921, and is fitted with compound turbines and De laval double reduction gears, has covered since going into commission over 1,040,726 nautical miles. The turbines consist of a high pressure ahead and astern unit in one casing, and a low pressure ahead and astern unit in a second casing using steam at 200 pounds gage pressure to develop between 5600 to 6000 shaft horsepower at the operating sped. They drive the propeller at 82 revolutions per minute, giving a normal operating speed of 16½ knots, and covering the round trip in twelve days.

Recently a thorough inspection was made of the gears after eight years of service and they were found to be in practically perfect mechanical condition, so that, with proper care, which includes regular cleansing of the lubricant by passing it through a De Laval centrifugal oil purifier, they undoubtedly will outlast the hull. No difficulties of any kind have been experienced, not even the replacement of a single bearing.

ACTUAL service, in the final analysis, must be considered as the acid test of any product. Therefore the performance of the propulsion machinery on the Munargo as outlined in this article reflects great credit on the builder and also on the operating personnel. No machinery could give such results unless it was correct in principle and of the highest quality of workmanship and material. Gearing, both single and double reduction, when properly designed and built, has demonstrated its reliability beyond any question.

This performance, together with that of other vessels equipped with gears of the same make and type, such as the DIXIE and EL OCEANO of the Southern Pacific lines, demonstrates that double reduction gears, in addition to offering considerable savings in first cost and weight over single gear units and making possible superior turbine design and the most favorable propeller speed, are also entirely satisfactory in respect to mechanical operation.

S. S. Sandberg, vice preisdent and trustee of the Merchant Fleet Corp., has been chosen to act as president until a successor to the late J. R. Gordon is appointed. Mr. Sandberg is the southern Pacific section member of the shipping board and has just returned from a speaking tour of the Pacific coast.

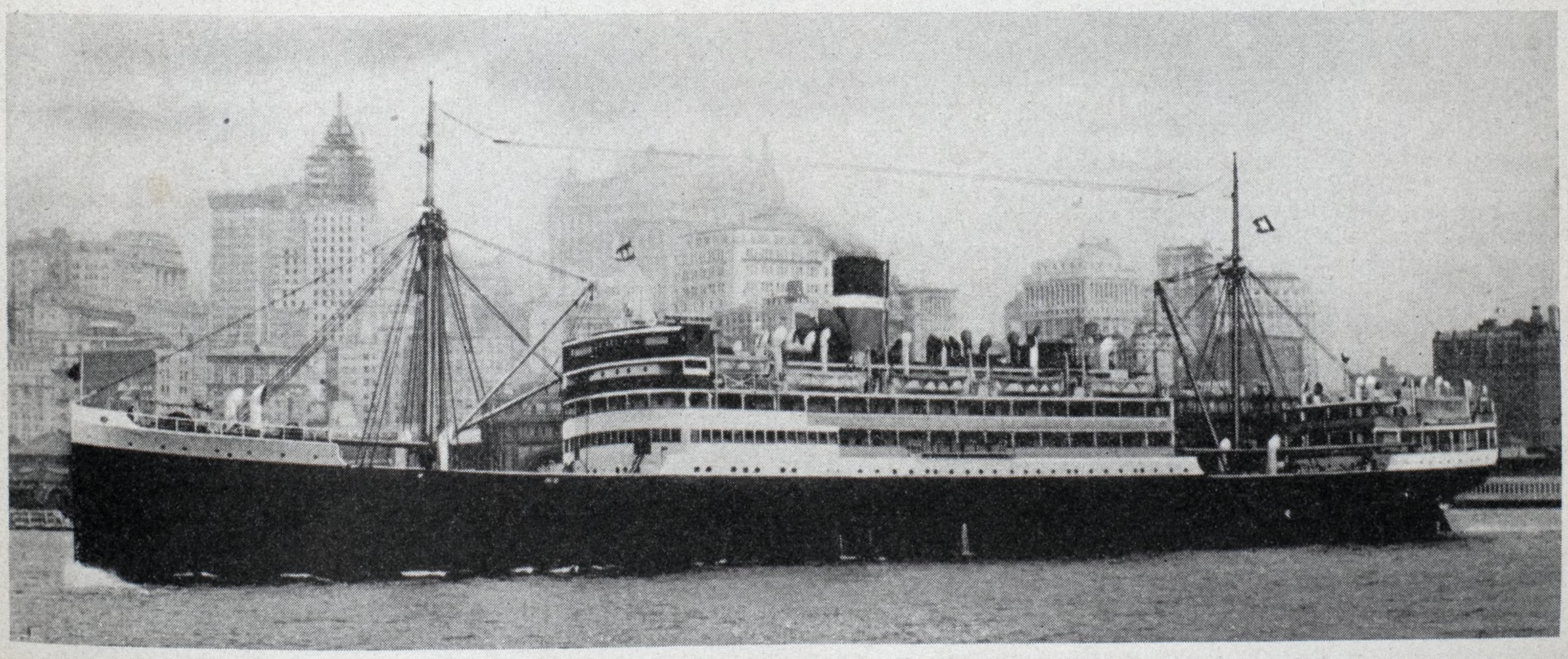
Increase Dry Docking Rates

The Todd Shipyards Corp. of 25 Broadway, New York announced recently that effective Oct. 1, the rates for drydocking vessels ranging from 2,000 to 16,000 gross tons in size will be increased from 5 cents to 8 cents a gross ton at its various yards in New York harbor. The company points out that the advance is being made with the view of getting charges nearer to an equitable basis, as the New York rates have been far too low.

The 8-cent rate will not only apply to the first day of drydocking vessels of from 2,000 to 16,000 gross tons, but for each succeeding twenty-four hours or lay days. For vessels ranging from 16,000 to 25,000 gross tons the rate will continue as at present, 12 cents for the first day and 10 cents for lay days. A special arrangement will be entered into with the owners of vessels in excess of 25,000 tons.

This adjustment will only apply to the Todd plants in the New York district namely the Robins Dry Dock & Repair Company, of Brooklyn; Tietjen & Lang Dry Dock Co. of Hoboken; Todd Dry Dock Engineering & Repair Corp., (Teboe plant), Brooklyn, and the Todd Dry Dock Engineering & Repair Corp. (Clinton plant), Brooklyn.

The United Dry Docks, Inc., have also advanced their rates, effective Oct. 1. Now for the first time in many years the rates on dry docking in New York have been placed on a basis of some return to the repair yard.



Munson Liner Munargo—Eight Years in Operation—Logged 1,040,726 *Nautical Miles—Gears Fine Condition*

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

A CONTRACT of transportation of grain and agreement to store the grain aboard ship during the winter and her subsequent delivery of the cargo in the ensuing spring at a specified elevator did not constitute a maritime contract within admiralty jurisdiction; nor did negligence in failing to exercise proper care in the storage of the grain on the vessel during the winter after completion of the transportation constitute a marine tort.—Pillsbury Flour Mills Co. v. Interlake Steamship Co., 36 F. (2d) 390.

* * *

AS TO dangers of a distinctly maritime character and unusual stresses set up by the movement of a vessel at sea which lie peculiarly within the knowledge and experience of mariners, the charterers of a vessel are entitled to rely on the master's judgment.—NIDARHOLM, 34 F. (2d) 442.

* * *

DAMAGES arising out of a special contract cannot be recovered on vessel owner's breach of charter party unless the party against whom the damages are sought had notice of the existence of such special contract and of its terms before or at the time when the contract was finally entered into. * * * The measure of damages recoverable by a vessel for refusal to load under the charter party, is the net amount the vessel would have earned under the charter party, less the net amount actually earned during the period that would have been consumed by its performance or that could have been earned by reasonable diligence during said period.—Hildebrand v. Geneva Mill Co., 32 F. (2d) 343.

* * *

IT IS the duty of the charterer, in the absence of some specific stipulation to the contrary, to furnish a berth for his vessel, and delay on account of the congested condition of the port of discharge is chargeable to the charterer and not to the vessel.—Hildebrand v. Geneva Mill Co., 32 F. (2d) 343.

* * *

THE fact that a charter party was entered into in the city of New York, between a New York corporation and a foreign shipowner, and the providing in the charter party for the payment of a commission on the gross amount of freight to New York shipbrokers, did not constitute engaging in commerce among the several states or with foreign nations within the Arbitration act of Feb. 12, 1925, and such law does not apply. No cargo was shipped from any state of the United States to another, nor from any such state to a foreign country, nor was any cargo consigned to, or brought into, any state of the United States from any such state or foreign country.—VOLSINIO, 32 F. (2d) 357.

* * *

THREE elements are necessary to a valid salvage claim, it was pointed out in the case of Robert B. Sizer & Co. v. Chiarello Bros., Inc., 32 F. (2d) 333: (1) A marine peril. (2) Service voluntarily rendered, when not required as an existing duty or from a special contract. (3) Success in whole or in part, or that the service rendered contributed to such success. It was held in the case cited that one contracting to lighter lumber from a steamship to a dock, was not entitled to salvage against the owner in recovering lumber going overboard by reason of swells from a passing ship, since, having agreed to convey and deliver lumber, any claim for additional expense must be against the person causing it rather than the owner.

* * *

WHERE a charter provides that hire shall continue until the hour of the day of her redelivery in like good order and condition, ordinary wear and tear excepted, the charterer is liable for damages in excess of ordinary wear and tear, together with detention during repairs. The charterer is also liable for damage to the vessel caused by stevedores while the vessel was under charter, and for the value of the use of the vessel during the time it was laid up for making repairs for which the charterer was liable.—N. V. Zuid Hollandische Sheepvaarts Maatschappij v. Munson Steamship line, 32 F. (2d) 536.

* * *

A GENERAL average adjustment involves the apportionment of items as between general average and special charges, the collection of the funds from the different underwriting interests, and the distribution of the same according to the adjustment made. A collection fee charged in the case of diverse ownership of interest is regarded as proper, and the question is whether, in the case of common ownership with diverse underwriting, a collection charge is improper. In the case of common ownership, adjustments differ in no respect for an adjustment properly made as between the several interests of cargo, ship, and freight, is binding on the underwriters. They stand in the place of the assured. When there is common ownership of the several interests, the adjustment is in effect in behalf of the underwriters themselves. It is the custom, and it is authorized by the law merchant, that a commission of 2½ per cent be paid for collecting general average. It is authoritatively settled that general average depends upon the event of a common sacrifice for the benefit of all who are or may be interested in the voyage, not upon the existence of different contributory subjects. Contribution is a consequence. Neither the absence of a cargo nor the common ownership of vessel and cargo will affect the application of the principle of general average.—Gulf Refining Co. v. Universal Insurance Co., 32 F. (2d) 555.

* * *

A CITY chartering a scow for use in transporting ashes and rubbish is not an insurer, but liable primarily only for its own negligence, and secondarily when the negligence is shown to be that of another to whom the vessel has been intrusted by the bailee. Mere proof that fire occurred is not sufficient upon which to base negligence.—Shamrock Towing Co., Inc., v. City of New York, 32 F. (2d) 684.

* * *

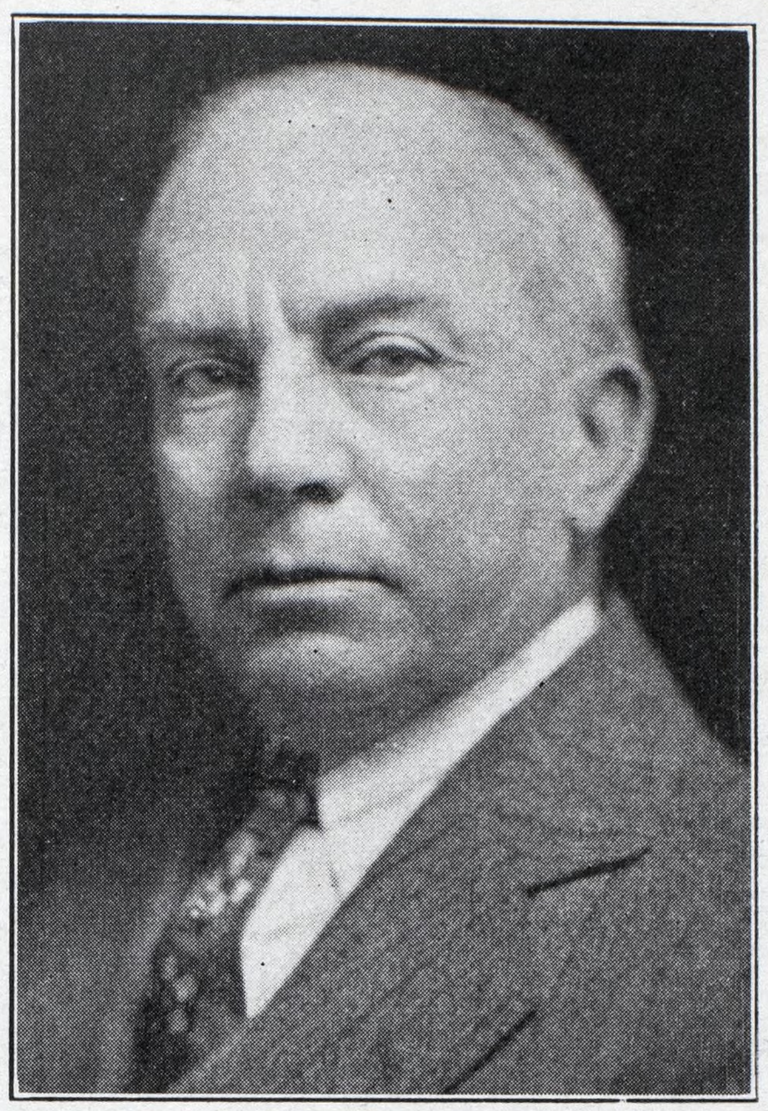
AN ATTORNEY has a general or retaining lien on papers, documents, securities, or money coming into his possession in the course of his employment, but he has no lien on property involved in the litigation in which he acts as attorney for a party defendant. Applying this rule, it was decided in the case of Gray v. Hopkons-Carter Hardware Co., 32 F. (2d) 876, that a claim for a fee as proctor for the owner of a vessel did not constitute a lien on the vessel nor give claimant the right to share in the proceeds of sale of the vessel.

* * *

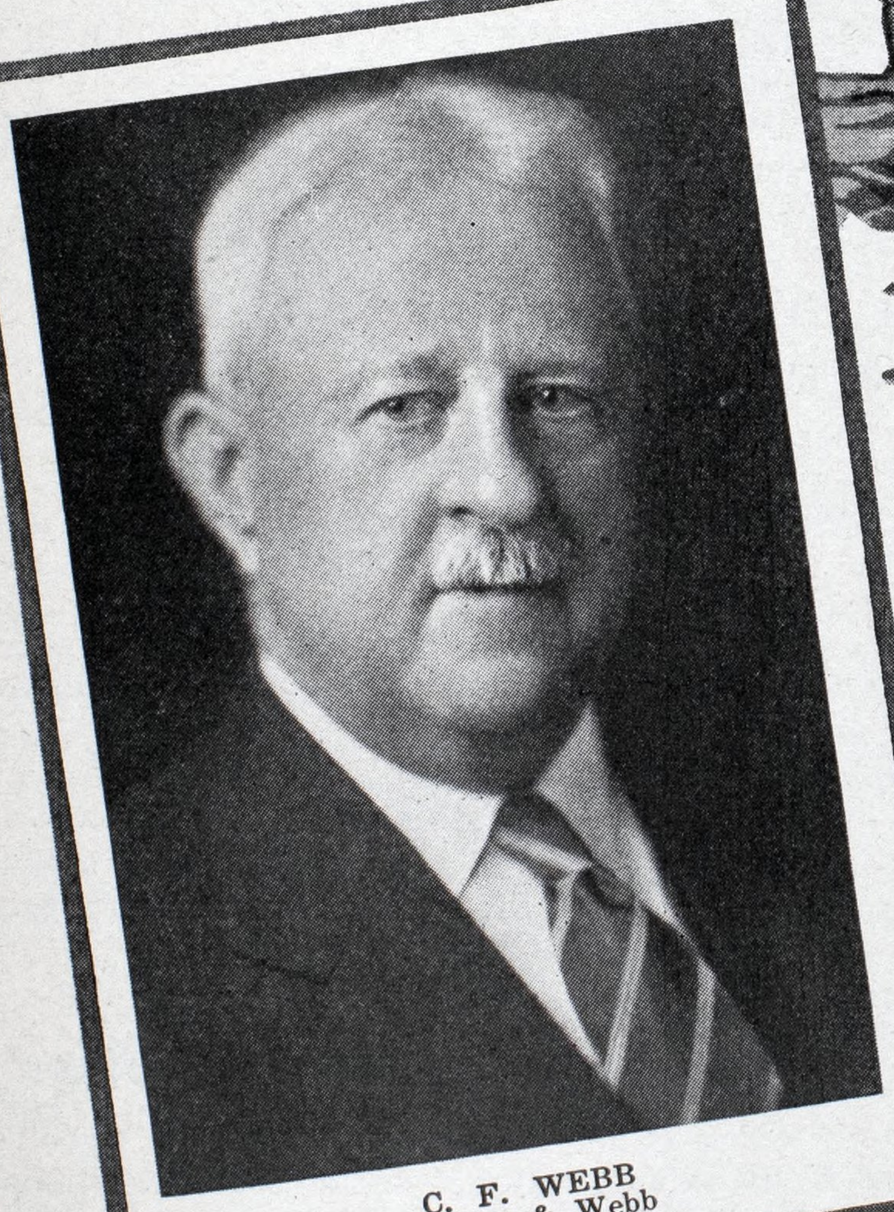
CHARTER party which provided for the ship being "tight, staunch, strong, and in every way properly fitted" for the voyage, and which contained exceptions as to "loss or damage arising from * * * any latent defect in the machinery or hull, not resulting from want of due diligence by the owners of the ship, or any of them, or by the ship's husband or manager * * * and all and every danger and accidents of the seas," did not exempt the shipowner from the duty of furnishing a seaworthy vessel at the commencement of the voyage.—Unterweser Reederei Aktiengesellschaft v. Potash Importing Corp. of America, 36 F. (2d) 869.

MEN of MARINE AFFAIRS

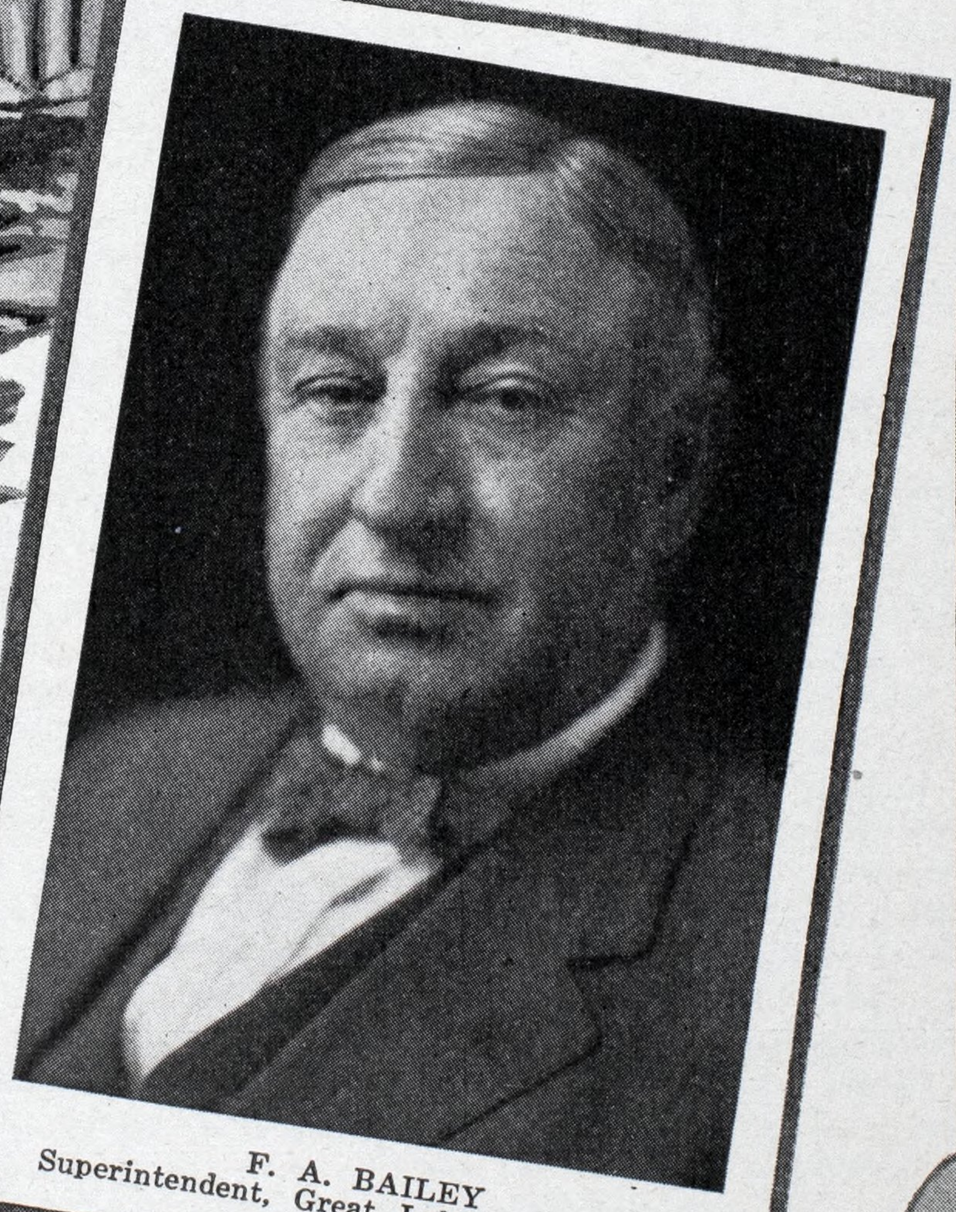
H. B. WALKER
Pres. American Steamship Owners' Association



GEORGE A. MARR
Sec. & Treas., Lake Carriers' Association



C. F. WEBB
Rogers & Webb



F. A. BAILEY
Superintendent, Great Lakes Towing Co.

Photos by Blank-Stoller, Inc.

Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let—Shipping Board Loans Made, Authorized or Pending

AFTER a conference, H. G. Smith and H. C. Hunter, president and counsel, respectively, of the National Council of American Shipbuilders, in a joint statement Sept. 11 said:

"American shipbuilding has doubled in the past year. There are 275,000 tons of high grade shipping under construction at this moment. Between 26,000 and 27,000 skilled and semi-skilled workers are busily engaged. The prospect is good for continuance of this volume of construction over the next three or four years.

"The 275,000 tons now under construction are of the high class passenger type of vessel, equivalent to 400,000 tons of cargo shipping. Shipbuilding has doubled in the past year and quadrupled in the past two years in the United States.

"This is the beginning of a real program to establish shipping upon the seas under private ownership of American citizens and is entirely due to the policy inaugurated by the merchant marine act of 1928."

Contract for Barges

The Midland Barge Co. has booked an important contract for the construction of steel cargo barges for the New York state barge canal. Operations are expected to be maintained at capacity through the final quarter of this year.

Bids on New Liners

Bids submitted by the leading shipyards for construction of four fast turboelectric liners for the Panama Mail line's New York-California service were opened Sept. 2. Contracts for the new ships, which may cost $4,000,000 each, will be awarded as soon as possible after bids are opened.

The new liners, with a displacement of 15,600 tons, a length of 508 feet and a beam of 70 feet, will be built to maintain a speed of 19 knots in the intercoastal run, with reserve power to increase this speed if the occasion arises. Accommodations will be provided for 201 first and 66 tourist class passengers.

Cox and Gibbs, well known marine architects, designed the new ships which will be built in excess of the requirements of the London Conference for the Safety of Life at Sea and the United States regulations. Nine transverse bulkheads will be provided and the ships will be of the two-compartment type for maximum safety.

Space for 7000 measured tons of cargo will also be provided for, a large part of this space being given over to the handling of perishable and semiperishable products.

Announcement of the bids submitted for the construction of the vessels is held in abeyance pending approval of the figures by the shipping board. It is understood that the bid of the Federal Shipbuilding & Dry Dock Co., Kearny, N. J., was the lowest of the seven submitted.

Build Welded Barge

Construction of a new type welded steel barge of 200 tons capacity for operation in the Mississippi barge service of the Inland Waterways Corp. has been approved by Secretary of War Hurley. The boat is to cost about $50,000, or about $15,000 less than a riveted barge of the same dimensions. If the vessel proves satisfactory it is expected that orders will be placed for upward of 150 of the same type.

Signs Construction Loan

Contracts covering loans authorized on May 14 in favor of the Motor Tankship Corp., to be used in constructing five motor tankers, were signed recently by T. V. O'Connor, chairman of the shipping board. The contracts were signed previously by officials of the Motor Tankship Corp. and the Sun Shipbuilding and Dry Dock Co., in whose shipyard at Chester, Pa., the vessels will be built.

The loans, amounting to $1,265,625 for each tanker, represent three fourths of the total construction cost. Interest will be paid semiannually and the principal annually over a period of 20 years.

Each tanker will be approximately 9000 gross tons. Plans for the vessels have been approved by the secretary of the navy and the committee on construction loans of the shipping board. When completed the five tankers will be chartered to the Sun Oil Co.

This is the second series of loans made by the shipping board to the Motor Tankship Corp. for tanker construction. Last September loans were authorized for five motor tankers of approximately 13,450 deadweight tons each. These also were to be built by the Sun Shipbuilding and Dry Dock Co. Four of the latter have been completed. Loans on the first group amounted to $1,260,937 a vessel.

Lay New Liner Keel

The keel for the FLORIDA was laid at the yard of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., Sept. 2, 1930. This vessel is for the Peninsular & Occidental Steamship Co. and is to be used in the Key West-Havana express run.

The vessel is of the three-deck type with continuous promenade deck, semi-cruiser stern, bulbous bow and slightly curved stem, having dimensions 386 feet 6 inches overall, 365 feet between perpendiculars, 56 feet 6 inches molded beam, 28 feet 6 inch molded depth to upper deck. The speed of the vessel at service draft will be 19½ to 20 knots. Passenger accommodations will be fitted for approximately 612 first class and 130 second class passengers. The propelling machinery will consist of two sets of Parsons turbines with De Laval single reduction gears, capable of developing a total of 8500 shaft horsepower with 10 per cent continuous overload. This vessel will have outward appearance similar to that of the EVANGELINE and YARMOUTH designed by Theodore E. Ferris. The FLORIDA is being constructed under the supervision of Carroll S. Smith, consulting engineer for the owners. The vessel is scheduled to be delivered in June 1931.

Recondition Liner

The passenger liner MALOLO, of the Matson Navigation Co., was withdrawn from the San Francisco-Honolulu service of the company August 30 and will be completely overhauled and prepared for the second annual cruise of the company around the Pacific. Most of the work on the liner will be directed with a view to providing greater comfort for the passenger.

Consider New Ships

Plans are reported under consideration by the American-Hawaiian line for the construction of from three to five passenger and cargo ships for the intercoastal trade.

Belief is, that faster vessels are to be entered in the intercoastal service and that the companies with speedier vessels will get the high class business in the trade.

Newport News Yard Bid Low on New Air Craft Carrier

BIDS to build aircraft carrier No. 4 were opened at noon Sept. 3 by the navy department and award of contract is expected by the secretary of the navy within the next few days.

The bids received for construction of hull and machinery were as follows: Bethlehem Shipbuilding Corp., for construction at their Fore River plant at Quincy, Mass., with a construction period of 39 months, $16,760,000; New York Shipbuilding Co., Camden, N. J., with a construction period of 42 months, $16,334,000; Newport News Shipbuilding & Dry Dock Co., Newport News, Va., with construction period of 40 months, $15,560,000.

The opening of the carrier's bids was attended by a large audience of naval officials and shipbuilding company representatives. The event marked the first time in American naval history that proposals have been opened for an aircraft carrier. The present aircraft carriers afloat originally were designed as other than carriers. They include the SARATOGA and the LEXINGTON, designed originally as battle cruisers, and the LANGLEY, formerly a collier. Aircraft carrier No. 4 has been designed from the keel up for aircraft work in the fleet.

The new carrier, which will have a designed displacement of 13,800 tons, was authorized by act of congress Feb. 13, 1929. Its limit of cost, including armor and armament, was set at $19,000,000. Appropriations totaling $4,050,000 have been made by congress for starting construction.

To Build Third Vessel

Contract for construction of a third $7,000,000 vessel for the Matson line, operating between San Francisco, Hawaii and Australia, has been awarded the Fore River plant of the Bethlehem Shipbuilding Corp. Two similar liners are now under construction at the plant and the additional contract insures capacity operation for the next 25 months. The keel of the new ship will be laid next spring. The contract calls for delivery Jan. 1, 1932. The new vessel, like the two now in process of construction, will be a 20-knot, twin screw tubine geared vessel, 632 feet long and 79 feet beam, with accommodations for 505 first, 175 second and 72 third class passengers.

Lay Keel for New Yacht

The keel of what will be one of the most expensive yachts afloat was laid at the shipyard of the Bath Iron Works, Bath, Me. Sept. 18. The yacht, building for Prof. Elbridge R. Johnson of Morristown, N. J. is to be 365 feet long and will cost in the neighborhood of $1,500,000 not including the elaborate laboratory and exploration equipment. The launching of the vessel is expected to take place next spring.

Fourth Coast Guard Cutter Launched at Oakland

WORK continues to progress toward the completion of the elaborate coast guard shipbuilding program which has been under way for some time at the Oakland, Cal. yard of the General Engineering & Dry Dock Co. The SHOSHONE fourth coast guard cutter to be launched at this plant went overboard Sept. 11 at 2 p. m. In the preliminary specifications this vessel was known as No. 53.

Coast Guard Cutter Shoshone Launched at General Engineering & Dry Dock Co., Oakland, Calif., Sept. 11

She is in all respects similar to the ITASCA, SEBAGO and SARANAC also built by the General Engineering & Dry Dock Co. The first two have been delivered and are in service and the third, the SARANAC, was to be delivered on Sept. 15.

These vessels are well known in that they are similar to the CHELAN class built at the Fore River plant of the Bethlehem Shipbuilding Corp. They are of the cruising type and have the following characteristics: Length overall, 250 feet; beam molded, 42 feet; depth molded, 26 feet 10 inches; and displacement at 15 feet mean draft, 2000 tons. The main propelling machinery is turbine electric drive with single screw. The total shaft horsepower is 3220. The propelling machinery, turbines, generators and motors were all furnished by the Westinghouse Electric & Mfg. Co. Detailed information on this class of cutter will be found in the April shipbuilding issue of MARINE REVIEW page 44. Speed on trials of those cutters in commission has slightly exceeded 17 knots. Steaming radius is 8000 miles.

New Porto Rico Liner Will Enter Service in January

AT THE time this is written the new steamship BORINQUEN building for the New York & Porto Rico Steamship Co., is scheduled for launching at the Fore River plant of the Bethlehem Shipbuilding Corp., Quincy, Mass., Sept. 24 and will enter service about Jan. 1. The Porto Rico line, a subsidiary of the Agwi group, is one of the oldest of American steamship companies, its service between New York and the islands having been established more than 40 years ago. Miss Lillian Hull of Short Hills, N. J., daughter of V. K. Hull, first vice president of the Porto Rico line will act as sponsor.

BORINQUEN is the original Indian name for Porto Rico. When completed the new liner will represent an outlay of about $3,000,000. thus bringing the Agwi line's total building program during the past year and a half up to more than $13,000,000. More than $10,000,000 of this big outlay has gone for the construction of two super ships for the Ward line, the swift and luxurious MORRO CASTLE and ORIENTE. The former has just entered the New York-Havana run and she will be followed by the ORIENTE in November.

Designed by Theodore E. Ferris, well known New York naval architect, the BORINQUEN has been built especially for the Porto Rican and Dominican trade. She will be 429 feet long over all, 414 feet, between perpendiculars, 59 feet 6 inches beam, with a load draft of 23 feet 6 inches. Her displacement will be 11,000 long tons, gross tonnage about 7,000 and deadweight carrying capacity about 4,500 long tons. Luxurious accommodations will be provided for 360 passengers.

The propelling machinery will be of the latest approved type of single reduction geared turbines with an impulse wheel fitted at the forward end of the high-power turbine which will develop 6500 horsepower and drive the vessel at an average speed of 16 knots.

Fruit and other perishable products form a large part of the cargo carried from Porto Rico to New York. To care properly for these shipments a large refrigerating plant has been installed in the BORINQUEN and the greater part of all cargo space is being insulated and may be chilled for the safe handling of such shipments. In addition a precooling plant at the company's pier at San Juan, completed last spring, has a capacity for 20,000 cases of fruit. Perishable cargo may be held there as long as necessary prior to shipment.

The BORINQUEN together with other ships in the Porto Rico line's fleet, will offer weekly express sailings from New York and Porto Rico. The company is now operating the COAMO, SAN LORENZO, PORTO RICO, SAN JUAN and PONCE in the run.

New Tug and Carfloat for St. Lawrence River

The tug PRESCOTONT was launched from the yards of the Davie Shipbuilding & Repairing Co., a subsidiary of Canada Steamship lines, at Lauzon, Que., Sept. 11.

This tug embodies many advance features for vessels of her type and will be employed by the Canadian Pacific railway for towing a three-track railway car float across the St. Lawrence river between Prescott and Ogdensburg. She was christened by Mrs. M. McD. Duff, wife of the manager of the Canadian Pacific Great Lakes steamship service.

The PRESCOTONT is a single screw, steel ship, 177½ feet long, 27 feet beam and 13½ feet molded depth with a 12-foot maximum draft. Her power plant consists of twin diesel engines of the Winton type, each capable of delivering continuously 500 brake horsepower at not over 900 feet per minute piston speed with 245 revolutions per minute. The diesel engines are directly connected to twin generators which are capable of delivering continuously 330 kilowatts each at 250 volts when operated at 245 revolutions per minute. The propelling motor, to which current is supplied by these generators, will deliver continuously to the propeller shaft 800 horse-power at any speed from 105 to 135 revolutions per minute.

In operation, the car barge, which has three tracks with accommodation for 16 to 100-ton cars, will be lashed to the starboard counter of the tug, which it will be possible to control either from its own wheelhouse or from the bridge of the car barge.

The three-track railway car barge which was recently launched, is 290 feet long 45 feet beam, and 12½ feet molded depth, with a maximum draft of 6 feet 8 inches and has been designed to take care of any future increases in car and load weights. The wheel house, set on the bridge and near the forward end, contains electric controls to the engine of the tug, to the tug's steering engine and to that of the barge itself. The barge has twin rudders and electrically-driven capstans, the power for these and for the electric steering engines being supplied from the power plant on the tug. The carfloat which is to be towed by the above tug is now completed and is described below.

The carferry OGDENSBURG built at the Lorain yard of the American Ship Building Co. for the Canadian Pacific Car & Transport Co. was launched Aug. 30 at Lorain. This vessel, probably the first of its kind ever built, possesses an outstanding feature in that its electrical steering gear equipment permits control of the vessel either from the float itself or the tug. The OGDENSBURG will be operated between United States and Canadian ports. The vessel is a three-track float 290 feet long over all, 45 feet molded beam, and 12 feet six inches molded depth. It will be towed by a diesel electric tug. Among those present at the launching were: M. McD. Duff, marine manager of the Canadian Pacific R. R. Co., Montreal; D. W. Dinan, general manager of the New York Central R. R. Co., New York; G. H. Griffin, general passenger agent of the Canadian Pacific R. R. Co., Cleveland; T. J. Cooke, general freight agent of the New York Central R. R., Cleveland; E. Thwaites, general superintendent of the New York Central, Cleveland; E. L. Whitney, general coal & ore agent, New York Central, Cleveland; W. H. Gerhauser, president of the American Ship Building Co. and G. W. Cottrell and J. L. Wallace also of the shipbuilding company, Cleveland.

The Canadian Pacific, according to Montreal reports, is considering construction of two additonal liners of the DUCHESS type, but of 30,000 gross tons.

Two New Motor Liners

Two new motor liners recently ordered by the Societa Triestina di Navigazione Cosulich from the Cantiere Navale Triestino at Monfalcone are to have the following dimensions: Length, 570 feet; breadth, 75 feet 6 inches; depth, 45 feet; carrying capacity, 7200 tons d. w.; capacity of holds, 400,000 cubic feet, and gross tonnage, 20,000. It has not been decided whether the ships will be fitted with Sulzer or with Fiat engines, but in either case the propelling machinery will consist of two-stroke diesel engines of a total power of 17,000 shaft horsepower. Service speed is to be 19 knots. The ships will carry 100 first-class, 1000 third-class passengers and 522 emigrants.

Modernize Battleships

Incident to the modernization of the battleships PENNSYLVANIA and ARIZONA, now undergoing extensive alterations and reconditioning by the navy, the Westinghouse Electric and Manufacturing Co. announces receipt of an order from the government for high pressure and cruising turbines, with accompanying reduction gears, for installation in the vessels.

The cost of the new propulsion machinery will be approximately $500,000. In addition to the modernization of their machinery the big fighting ships, now more than 15 years old, are being fitted with improved underwater defense, in the form of blisters, new fire control equipment and other improvements, provided under the terms of the Washington conference.

The ARIZONA is in hand at the Norfolk navy yard and the PENNSYLVANIA at the Philadelphia navy yard.

Work Going Forward on Standard Oil Tankers

Four of the six 16,000-ton motor tankers recently ordered from German yards by the Deutsch-Amerikanische Petroleum Gesellschaft on behalf of the Standard Oil Co. of New York, are to have M.A.N. propelling machinery. They will be twin sets of double-acting, two-cycle engines of 2500 horsepower each. The engines, to be built by the Bremer Vulkan yard, Vegesack, will be constructed by that firm under license, while the Maschinenfabrik Augsburg-Nurnburg A.G. will themselves supply four engines. According to German newspaper reports, the six vessels are to be delivered within three years. The prices quoted by the German yards, it is stated, were 10 per cent below the British quotations.

May Build Three Vessels

Construction of three additional turboelectric passenger and cargo vessels of the same type as the CALIFORNIA, PENNSYLVANIA and VIRGINIA is contemplated by the International Mercantile Marine Co. The report from Seattle, stated that the vessels were to be added to the Panama Pacific line service in order to establish a schedule of weekly sailings between New York and California.

Municipal Ferry Launched

The new New York municipal ferryboat TOMKINSVILLE was launched Sept. 11 at the yard of the United Dry Docks Inc., Mariner's Harbor, Staten Island, and was christened by Mrs. John F. Curry.

The TOMKINSVILLE is the third in a building program of four ferries to be launched. She is a sistership of the DONGAN HILLS and is 267 feet long, 66 feet wide over guards and 19 feet 9 inches deep with a light draft of 12 feet 6 inches. She has two decks with passenger accommodations on both, affording a seating capacity of 1,650. Her cabins and deck house are finished in steel.

Cutter Contract Is Awarded

United Dry Docks Inc., 11 Broadway, New York, received notice on Sept. 18 from Seymour Lowman, assistant secretary of the treasury, that it had been awarded the contract for the construction of coast guard cutter No. 54 on its bid of $865,000. The company's bid was the lowest.

The cutter will be constructed at the Staten Island plant and will give employment to about 500 men for the next year. She will be 250 feet long, 42 feet beam and will have a displacement of 2000 tons. She will be driven by turboelectric engines at a speed of 16 knots.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	554	2,716,668	586	2,855,323
July	578	2,717,787	616	2,815,336
June	585	2,722,344	559	2,596,692
May	592	2,697,642	643	2,955,826
April	558	2,662,532	574	2,601.047
March	546	2,490,027	562	2,470,228
February	508	2,280,543	512	2,272,393
January	542	2,506,444	572	2,658,125
December	517	2.331.342	518	2.257.424
November, 1929	520	2,236,677	537	2,387,932

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	92	244,206	55	144,201
July	96	246,866	68	151,861
June	92	240,323	72	169,627
May	105	2.1.618	64	143,167
April	89	236,257	63	177,289
March	96	285,754	58	190,093
February	86	248,417	67	194,809
January	94	281,558	66	202,453
December	87	237,510	49	143,761
November, 1929	80	222,026	48	133,872

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	115	305,649	101	299,454
July	152	325.325	110	222,555
June	152	325,325	110	222,555
May	163	362,849	114	274,019
April	105	298,347	76	203,497
March	85	271,423	57	193,317
February	87	281,012	44	159,767
January	93	306,097	42	128,581
December	95	286,749	62	208.978
November, 1929	101	332,269	67	221,318

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	36	69,765	36	72,282
July	42	83,987	42	84,939
June	39	70,119	34	60,536
May	31	46,797	33	52,619
April	17	47,308	20	52,313
February	26	71,155	21	57,834
January	27	72,734	26	71,929
December	22	47,329	23	51,644
November, 1929	26	51,231	26	50,475

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	7	29,532	4	16,388
July	10	36,403	5	19,623
June	6	26,588	4	18,640
May	7	28,953	6	23,794
April	10	44,564	6	24,407
March	7	31,668	5	23,382
February	12	44,382	7	28,774
January	13	48.880	5	24,055
December	10	35.615	4	16,406
November, 1929	10	38,203	6	22,371

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
July, 1930	30	118,919	53	193,425
June	31	122,569	48	175,167
May	32	122.714	49	179 845
April	32	121,646	46	167,358
March	26	103,710	44	159,420
February	31	123,100	47	185,192
January	31	122,031	44	165,208
December	39	146,486	53	118.117
November	34	129.809	65	234.575
October, 1929	39	148,172	59	221,007

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	130	412,209	125	396,421
July	132	444,823	144	455,226
June	153	486,645	157	481,837
May	152	457,169	150	463,958
April	166	502,204	179	529,912
March	141	438,638	139	433,168
February	139	432,422	142	431,664
January	131	422,932	135	435,506
December	134	415,201	134	425.362
November, 1930	132	438,274	137	446,120

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	28	66,765	50	139,710
July	27	63,721	60	144,446
June	23	52,701	43	109,274
May	28	58,214	53	131,768
May, 1930	28	58,214	53	131,768
April	14	35,914	61	178.792
February	21	47,835	59	180,510
January	13	27,927	75	208,959
December	30	75.636	58	164.287
November, 1929	39	50,600	79	204,216

Jacksonville

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	15	29,565	12	20,856
July	6	14 312	8	20.739
June	10	25,129	12	23,737
May	14	32,001	19	51,210
April	13	23,378	13	27,999
March	17	26,625	12	23,963
February	14	35,002	13	31,353
January	12	24,225	16	31,722
December	19	36,831	12	20,409
November, 1929	10	22,938	10	18,750

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	50	61,440	50	61,666
July	56	68,968	55	69,397
June	57	69,679	56	68,653
May	104	120,788	108	120,160
April	89	90,105	82	90,249
March	93	89,490	76	86,235
February	85	90,050	70	87,109
January	74	86.081	71	85,990
December	68	78,984	65	78.634
November, 1929	84	97,555	83	97,217

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	102	190,362	96	176,488
July	113	211,989	95	173,549
June	113	211,446	111	212,639
May	98	169.700	106	203,070
April	115	225,516	119	235,115
March	131	280,484	126	286,119
February	104	254,408	116	276,137
January	118	281,672	108	256,384
December	110	262,685	101	238,149
November, 1929	107	231,376	111	259,712

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	48	200,602	48	209,109
July	54	248.954	60	261,746
June	49	215,525	53	228,554
May	54	235.178	53	222,715
April	55	230,429	55	217,705
March	52	205,674	59	245,363
February	55	231,213	47	195,156
January	51	229,516	55	246,266
December	57	292.419	62	302.713
November, 1929	68	278,207	73	306,493

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
July, 1930	270	697,526	245	653,562
June	233	606,340	239	626,307
May	260	686,543	251	662,383
April	226	712,630	261	701,159
March	255	703,361	263	699,493
February	263	715,681	237	630.673
January	252	706,945	260	715,903
December	273	772,310	279	785,160
November	268	736.452	269	739.461
October, 1929	244	681,983	261	713,490

Charleston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net. tonnage	—Clearances— No. ships	Net tonnage
April, 1930	22	49,651	26	56,022
March	32	70,250	24	60,834
February	20	52,660	18	44,494
January	25	61,031	22	58,857
December	16	42,198	19	46,455
November	24	62,691	27	75,588
October	24	62,345	25	65,733
September	19	52,795	12	32,870
August	17	37.818	15	29,341
July, 1929	11	21,622	10	20,558

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	37	82,429	97	277,077
July	40	93,999	83	249,064
June	28	60,622	63	171,223
May	35	59,807	82	240,137
April	26	39,332	66	183,706
March	24	31,987	82	235,656
February	26	48,200	68	197,140
January	30	77,176	87	274,299
December	27	65.306	104	358.823
November, 1929	28	68,030	108	332,315

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	211	631,167	221	621,088
July	230	687,670	196	611,768
June	240	632,188	225	641.270
April	214	639,153	200	637,922
March	211	682,547	218	677,011
February	177	580,092	165	542,392
January	185	601,710	176	596,007
December	212	619,119	178	589,551
November	225	676,209	215	664,661
September, 1929	259	621,704	225	605,808

San Francisco

(Exclusive of Domestic)

Month	—Entrances— No ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	164	670,748	159	653,208
July	166	674,380	166	676,092
June	154	652,411	134	560,605
May	168	709,182	156	625,712
April	161	555,903	156	569,368
March	179	710,763	150	631,782
February	142	565,514	135	567,268
January	158	644,015	149	630,336
December	182	632.677	148	558,136
November, 1929	161	620,878	143	579,803

Houston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
August, 1930	39	147,462	69	257,365
July	30	120,727	42	158,570
June	47	190,145	45	193,620
May	41	146,840	47	172,171
April	38	139.147	57	206,182
March	33	130,108	43	162,519
February	37	149,161	60	226,761
January	28	99,518	43	148,219
December	39	152,270	62	232,090
November, 1929	40	143,360	54	185,243

Note: The figures given in this article are for direct entrances and clearances. Additional vessels in foreign trade enter and clear from and to other American ports after original entry and before final departure. At the port of Philadelphia, for instance, additional vessels in the foreign trade in this category were 55 of 144,201 net tons entered and 77 of 267,110 net tons cleared for the month of August.

Reviews of Late Books

Techno-Diktionar, by Hubert Hermanns; paper, 432 pages, 4½ x 6 inches; published by the author and supplied by MARINE REVIEW for $3, plus 15 cents postage; in Europe by Penton Publishing Co., Ltd., Caxton House, London, for 15s, net.

In this pocket-size volume has been gathered a wealth of technical terms from metallurgical, foundry, factory and workshop practice. There are no definitions, but translations are given of the terms from English, German or Italian into the other two. The reader of technical material in either foreign language will find this of great aid as much of the material is outside the usual dictionaries.

Penton's Machine Shop Directory, 1930-31 edition; fabrikoid, 640 pages, 5¼ x 8¼, published by The Penton Publishing Co., Cleveland and supplied by MARINE REVIEW for $25 plus 15 cents postage.

The first edition of *Penton's Machine Shop Directory* contains data on 5240 companies in the United States and 304 in Canada. The main listing is alphabetical, with a cross index arranged geographically by states and cities. This should be of value to purchasers desiring to use the directory in conjunction with specific sales territories.

Considerable care has been exercised in the selection of companies listed, small and extraneous organizations being omitted from the list. Information presented includes the name and address of each company, principal products and in most cases the year established, capitalization, number of employes in machine shop and the personnel, both executive and operating. This directory should be of value to many different types of purchasers, since names of such individuals as storekeepers, tool room foreman, chief draftsman, etc., are listed.

A number of blank pages are contained at the end of the book for listing additional data by the purchaser. This in an important feature of the book, since the user will have an opportunity to make additions and corrections in a space provided for that purpose.

Like all directories and similar publications, the sooner the book is bought after publication, the greater the value.

Marine Conference Report

The minutes of proceedings of the third annual conference on the merchant marine, held in Washington on April 23 and 24, 1930, are being distributed. Among the subjects considered at the conference were the following: Reduction of differential between shipbuilding costs here and abroad; methods of increasing patronage for American ships; marine insurance; government aid to American ships not benefited by mail contracts; construction program under Jones-White act; preservation of American direct trade; co-operation between shippers and ship operators in the use of American ships; Far Eastern markets for American goods; safety of marine workers; marine engineering development and research; work of American Marine Standards committee; American port development; what the department of state is doing abroad to aid American shipping; what the department of commerce is doing abroad to aid American shipping; efficiency in cargo handling; training of merchant marine officers; safety of life at sea and load-line; Great Lakes-Atlantic waterway. The volume of proceedings contains discussions by some of the leading authorities on outstanding problems in the shipping industry.

These annual conferences, inaugurated by the shipping board in January, 1928, are the most comprehensive meetings of their kind ever held in this country, and have produced a gratifying spirit of co-operation and good will in American shipping and associated industries.

Chairman O'Connor anticipates that the 1931 conference will come somewhat earlier than the one held this year.

What the British Are Doing in Shipbuilding

LAUNCHINGS from Scottish shipbuilding yards in August were more than double those of July and well in advance of the average August output. The total was 31 vessels with an aggregate tonnage of nearly 74,000, compared with 17 vessels and 34,598 tons in the previous month. Fresh contracts are scarce and only a few ships have been commenced so that the outlook is not encouraging. The Clyde launching production consisted of 19 vessels with a total tonnage of 59,531. The largest vessel launched was the KENYA, 9700 tons gross.

* * *

THE keels of the new destroyers, CRUSADER and COMET the mining school tender NIGHTINGALE, will be laid in Portsmouth dockyard this month. The destroyers are part of the 1929 naval program deferred through the Disarmament conference. In the 1930 navy estimates £174,795 was estimated to be spent on these two destroyers by March next year, of which £40,000 represents dockyard labor. The mining school tender NIGHTINGALE will be completed during the present financial year. The estimated cost is £27,259, of which dockyard labor will absorb £8000. A busy time is predicted for the Portsmouth yard as next year it is allocated the new cruiser and flotilla tender and there should be four vessels under construction at the same time.

* * *

ONE of the two Cunard vessels is expected to be built on the Tyne. The other has already been placed on the Clyde. Official particulars have not yet been issued but the new ships are expected to exceed 1000 feet in length and their gross tonnage will be about 70,000.

* * *

WITH the launch of the motor tanker CHEYENNE for the Anglo-American Oil Co. Ltd. the firm Palmers of Jarrow-upon-Tyne, brought the number of ships built and launched at their yards to 1000. The CHEYENNE has a deadweight tonnage of 12,400. Interesting features in the ship are two-berth cabins aft for the crew and an artificial rain apparatus to keep the decks wet and tanks cool.

* * *

FOR the new CUNARDER which is to be built on the Clyde C. A. Parsons & Co. of Heaton, Newcastle have secured the contracts for making the blades for the turbines. Fifty tons of blades will be needed. The Clyde trustees have approved of an expenditure of £34,000 as the first step in widening and deepening the Clyde at Clydebank in connection with the construction of the new CUNARDER to be built by John Brown & Co. This will afford the safe launching and departure to the open sea of the giant ship. The total cost of the dredging work will not be less than £70,000.

Popular Hamburg-American Captain Has Good Record

CAPTAIN CONRAD LUECK, commander of the steamer RELIANCE, on June 28 completed 25 years of service as captain in the Hamburg-American line, rounding out a total of 34 years with the Hapag fleet. Captain Lueck enjoys the distinction of being one of the most widely known masters of German ships sailing out of New York. In recognition of his services, Dr. Wilhelm Cuno, chairman of the Hamburg-American line, recently presented Capt. Lueck with a gold watch engraved with an appreciation of the line's esteem.

He was born in Oel, Germany, Dec. 17, 1869 and after graduating from high school shipped on a small Hamburg schooner for the West Indies. During the World war, he made his way back to Germany from Rio de Janeiro, Brazil, as a stowaway on a Swedish steamer. He served in the German navy as lieutenant commander and navigating officer of the cruiser MUNCHEN and toward the end of the war was stationed at the naval port of Wilhelmshafen on shore detail.

Capt. C. Lueck

In 1921 he commanded the steamer NIEDERWALD, the first post war steamer built in Germany, and later was in command of the steamers RUGIA, WESTPHALIA, CLEVELAND, OCEANA and RELIANCE. Captain Lueck's spare moments at sea are devoted to painting landscapes. Although he has spent 45 years at sea, he prefers landscapes to seascapes and whenever his stay in port permits, Capt. Lueck slips off to a wood or highway, sets up his easel and outlines a picture, which he finishes at sea.

Edward J. Gillmore, for 12 years connected with the traffic department of the Merchant Fleet Corp., has been appointed general agent in New York for the American Hampton Roads lines with headquarters in the offices of the United States lines, 45 Broadway, New York. He will have charge of traffic and solicitation in that territory.

Will Have Joint Display

Several units of Union Carbide and Carbon Corp., 30 East 42nd St., New York, will exhibit jointly at the international petroleum exposition in Tulsa Okla., Oct. 4 to 11. Booths 17 to 21 will be occupied by the following subsidiary companies of the corporation: The Linde Air Products Co., Oxweld Acetylene Co., Union Carbide Sales Co., Haynes Stellite Co. and The Prest-O-Lite Co., Inc.

An interesting feature of the exhibit will be a guessing contest on the tensile strength of oxy-acetylene welded coupons which will be pulled on an Oxweld portable tensile testing machine. Another feature will be an illuminated map showing the corporation's nation-wide facilities for the production and distribution of everything for oxwelding and cutting. This will be supplemented by a complete display of the various products used in the oil and gas industry, including Oxweld welding and cutting blowpipes and accessories, Prest-O-Weld blowpipes and accessories, Oxweld Type MP-2 portable generators, Haynes stellite welding rods and drilling tools, Union carbide and carbic in drums, and carbic flood lights.

The shipping board rejected the offer of James J. Clifford of $2,510,000 for the purchase of the property known as 45 Broadway, New York. The board instructed the Merchant Fleet Corp. to continue every effort to obtain a reasonable offer for this property.

Board Approves Contract

The shipping board on Sept. 10, approved the recommendations of the fleet corporation that a lump sum contract for $9,500 per voyage be entered into for the operation of the United Kingdom service which, it is estimated, will call for 102 voyages per annum under the consolidated arrangement. The lump sum agreement will be made with representatives of the Texas interests jointly with representatives of the New Orleans interests.

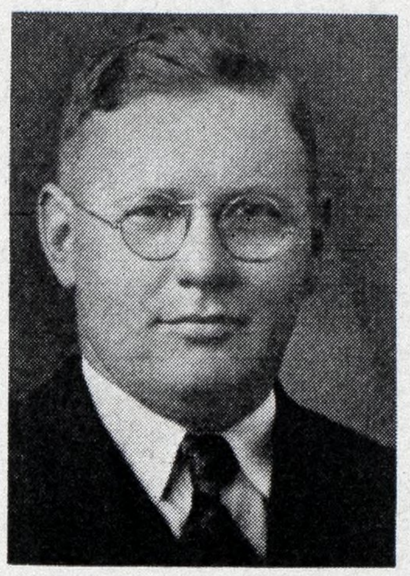
The board also approved the application of the American South African Line, Inc., purchaser of the American South African line, to make two voyages from North Atlantic ports to Rio de Janeiro with the Steamship EASTERN GLEN, with cargoes of coal exclusively on the outward voyages and ore on the return trips. These voyages will be made between Aug. 28, 1930 and Feb. 10, 1931.

Announcement was made on Sept. 9 that the big shipyard of William Beardmore & Co., Ltd., Dalmuir on the Clyde, Scotland, will be closed and dismantled before the end of the year. The property was purchased by the National Shipbuilders Security, Ltd., founded by shipbuilding firms last winter to eliminate competition and arrange production more economically. This marks not only the end of one of Britain's largest shipping enterprises but also the first fruits of the rationalization program upon which the shipbuilders started last February.

Great Lakes Operator is Killed in Accident

WILLIAM S. Hutchinson, well known in Great Lakes marine circles, was instantly killed in an automobile collision in Cleveland on Sept. 12. He was the son of Capt. Charles L. Hutchinson of Hutchinson & Co., Cleveland, manager of the Pioneer Steamship Co., one of the largest independent fleets operating on the Great Lakes.

Mr. Hutchinson was manager of the Rud Machine Co., a subsidiary of the Pioneer Steamship Co., with which he had been actively connected for about 15 years. In this connection he was in general charge of repairs for the Pioneer fleet, covering the entire Great Lakes region to supervise repair jobs on steamers wherever needed. During the war he served for approximately three and one-half years as a hull inspector for the United States shipping board at Pensacola, Fla. He was a director of the Pioneer Steamship Co. and a director and vice-president of the Buckeye Steamship Co. Mr. Hutchinson was a graduate of University school, Cleveland, and was 33 years old. He is survived by his widow and two children, Nancy and Charles L. II, his parents and two brothers, John T. and Gene C. Hutchinson. He was a member of the Cleveland Athletic and Westwood Country clubs.

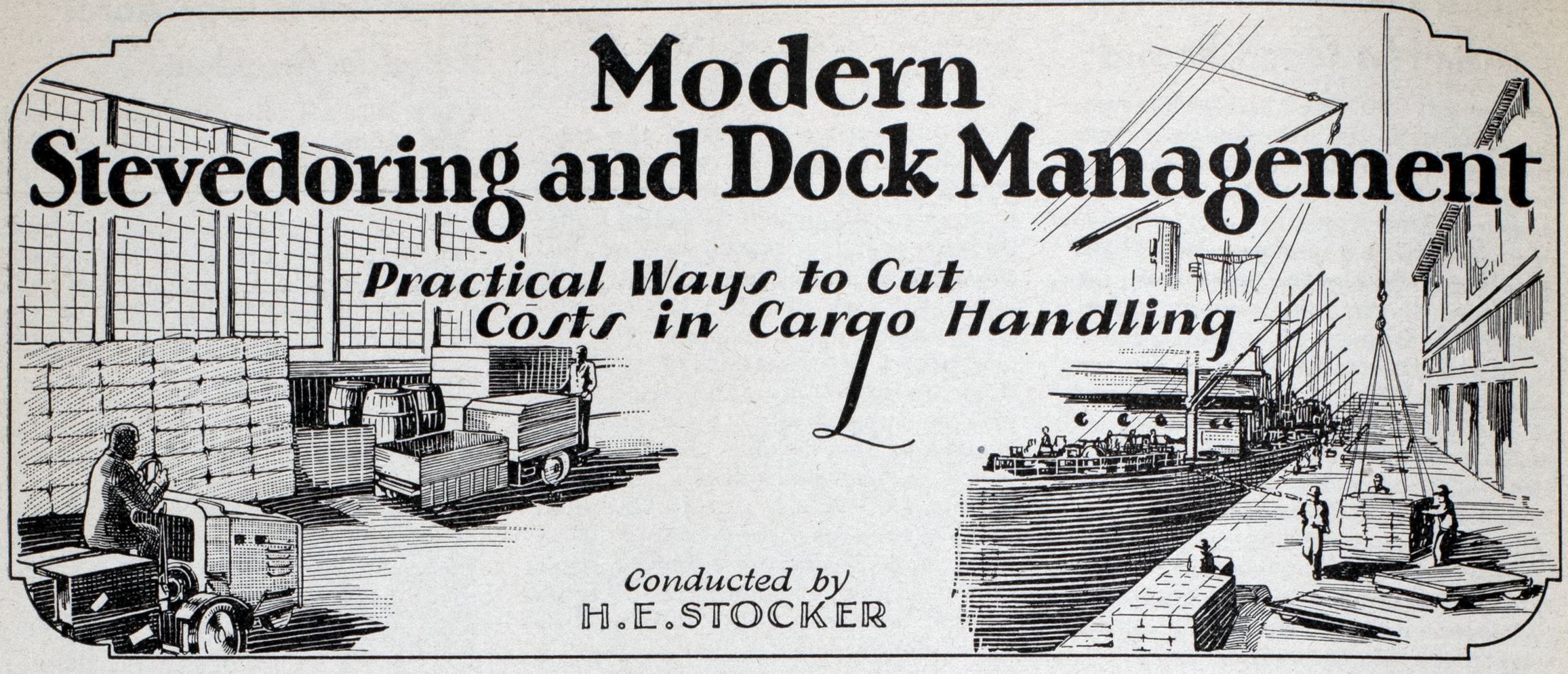


Wm. S. Hutchinson

Fairfax Captain Exonerated

Dickerson N. Hoover, supervising inspector general of the steamboat inspection service on Aug. 27 exonerated Captain Archie H. Brooks of the Merchants' & Miners' liner FAIRFAX of responsibility for collision of his ship with the motor tanker PINTHIS in Massachusetts bay on June 10, causing the death of 50 persons, including passengers and seamen. The announcement followed a thorough investigation of all evidence.

President Hoover's shipping advisory committee announced on Sept. 17 that the first hearing into the long controversy surrounding the proposed sale of the American Diamond and American-France lines by the shipping board to private interests had been postponed until Sept. 29. The hearing was deferred to await the return from Europe of J. E. Dockendorff, one of the bidders for the line.



How Mixed Marks Cargo Is Handled with Mechanical Equipment

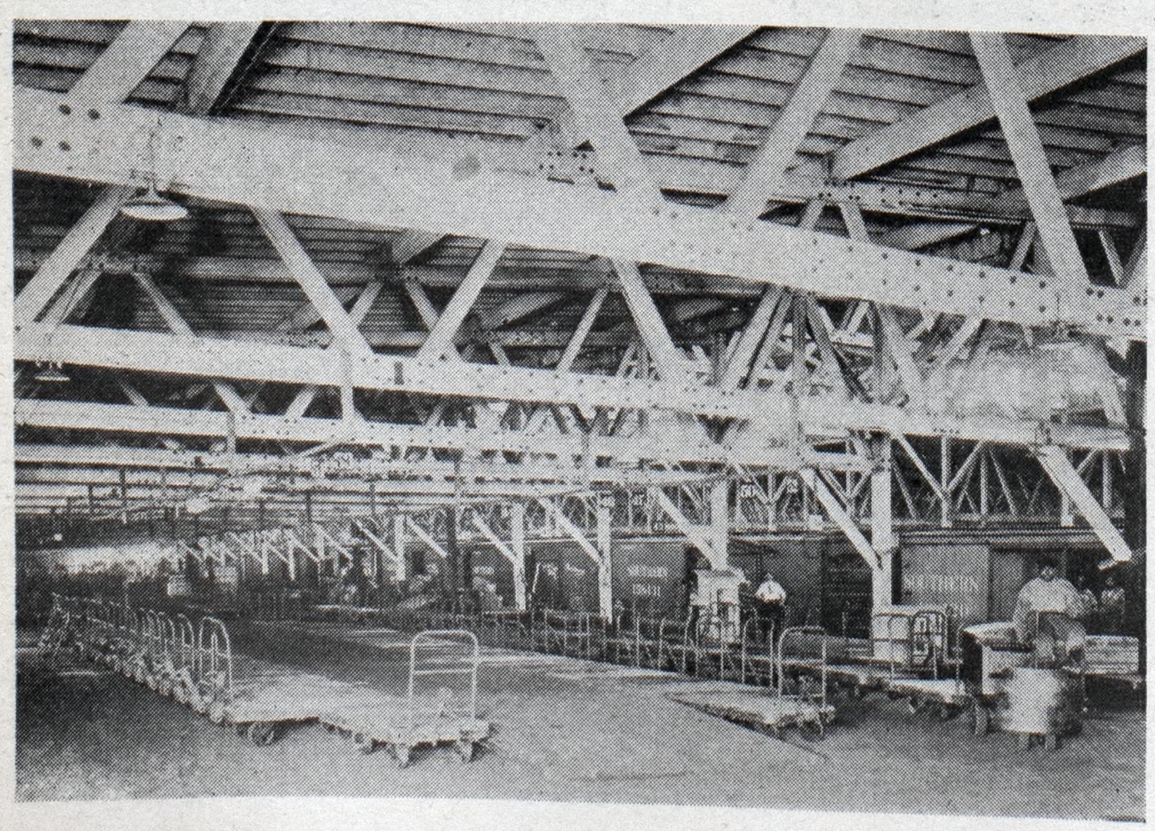
By H. E. Stocker

ONE interesting example of solving the mixed marks problem when mechanical equipment is used is found on the marine terminal of the Southern railway at Pinner's Point, Va., across the Elizabeth river from Norfolk. Conditions on this terminal "are different" than are to be found on various marine and railroad terminals and in industrial plants of many kinds throughout the country, and yet "different conditions" do not interfere with the successful operation of tractors and trailers. Also this terminal is an excellent example of the profitableness of junking obsolete equipment and replacing it with up-to-date equipment.

In May, 1922, four storage battery tractors and 250 trailers went into service at the Pinner's Point terminal to supersede the two wheel hand trucks. Handling costs were reduced approximately $42,000 a year.

The tractors and trailers are similar in design to tractors and trailers used in many other terminals, but through the co-operation of the agent, J. S. Parker, and the manufacturers, this somewhat standardized equipment was used to solve the problem of reducing costs in a terminal where the mixed marks problem is at its worst.

The cargo handled, totaling approximately 150,000 tons a year, consists largely of less than carload shipments. The shipments are taken out of Chesapeake bay steamers, Philadelphia and Norfolk steamers, and barges which bring freight from various terminals about Norfolk and Hampton roads. The steamers are discharged by their own stevedores who truck the freight to the pier. There it must be sorted according to destination marks for each of which a car is spotted. The railroad gangs truck the freight from pier to cars. There are 95 cars, each car representing a destination, spotted on four depressed tracks down the center of the pier, and on the two spur tracks at the inshore end. The pier is 806 feet long and 200 feet wide. The section west of the tracks is 50 feet wide, the other section is 65 feet wide.



Sorting Platform with Trailers in Position Awaiting Arrival of Steamer at the Marine Terminal of the Southern Railway at Pinners Point, Va.

Prior to May, 1922, all of the cargo was trucked with two wheel hand trucks from the boats and barges to a designated place on the pier floor opposite the car for which the freight was intended. At the cars the railroad company maintained checkers and stowers. The freight was checked and then trucked from the pier floor in to the cars where it was stowed.

Long trucking was facilitated by providing runways down each section of the pier. These are of maple, laid diagonally and give a good trucking surface. The remainder of the pier was floored with boards laid crosswise to the pier. Five cut gangways or drops were provided to facilitate handling cargo at varying stages of the tide.

With this plan of operation and with the facilities described, there was a large amount of cross trucking. A trucker might come out of a boat with six packages on his truck for four different cars, spotted at widely separated points. On another ter-

minal where a similar condition existed, I once watched and timed a trucker distributing five bags of flour. He was five minutes delivering the five bags. The fifth bag of flour was trucked half the length of the pier.

In order to meet the problem of cross trucking successfully with tractors and trailers, four platforms 60 by 9 feet were built in the shed, two in each section. Each platform has space around the sides for 18 trailers with end on to the platform. Ramps are provided so that hand trucks can be pushed on and off of the platforms. The platforms are 14 inches high, the same height as the trailers. Hung from the roof over each trailer is a number which corresponds to the number of the car for which each trailer is destined. The trailers are placed in the same order as the cars. When the boat docks, the truckers pick up loads as before, except that instead of doing a great deal of cross trucking, the trucker goes to one of the two platforms and deposits his packages on the trailers for which packages have been marked by freight readers placed at the door of the pier. If a trucker has packages for both platforms, he drops packages for one platform on the floor of the pier between the two platforms and picks up packages which have been dropped by other truckers for the platform to which he is going.

As soon as a trailer is loaded, it is pushed aside and replaced by an empty. When enough trailers have been loaded to make a train, the trailers are coupled together and hauled away by a tractor. Owing to the fact that the trailer platform set up is identical with the freight car set up, the trailers come in proper car and station order so that it is an easy matter to drop trailers at the proper car. The car stowers put the trailers into the cars and unload the freight. Then for the first time the freight is checked.

The tractors are of the twin steering wheel type with a turning radius of only 63 inches, an important quality when manoeuvering in restricted places on the pier. The trailers have roller bearings for the wheels and ball bearings in the caster plates, so that they are easily moved by hand.

Carload shipments are handled economically with the tractor trailer equipment. In such cases the trailers are placed in the boat or barge and loaded. The loaded trailers are made up into trains of three to four trailers and are hauled direct to car.

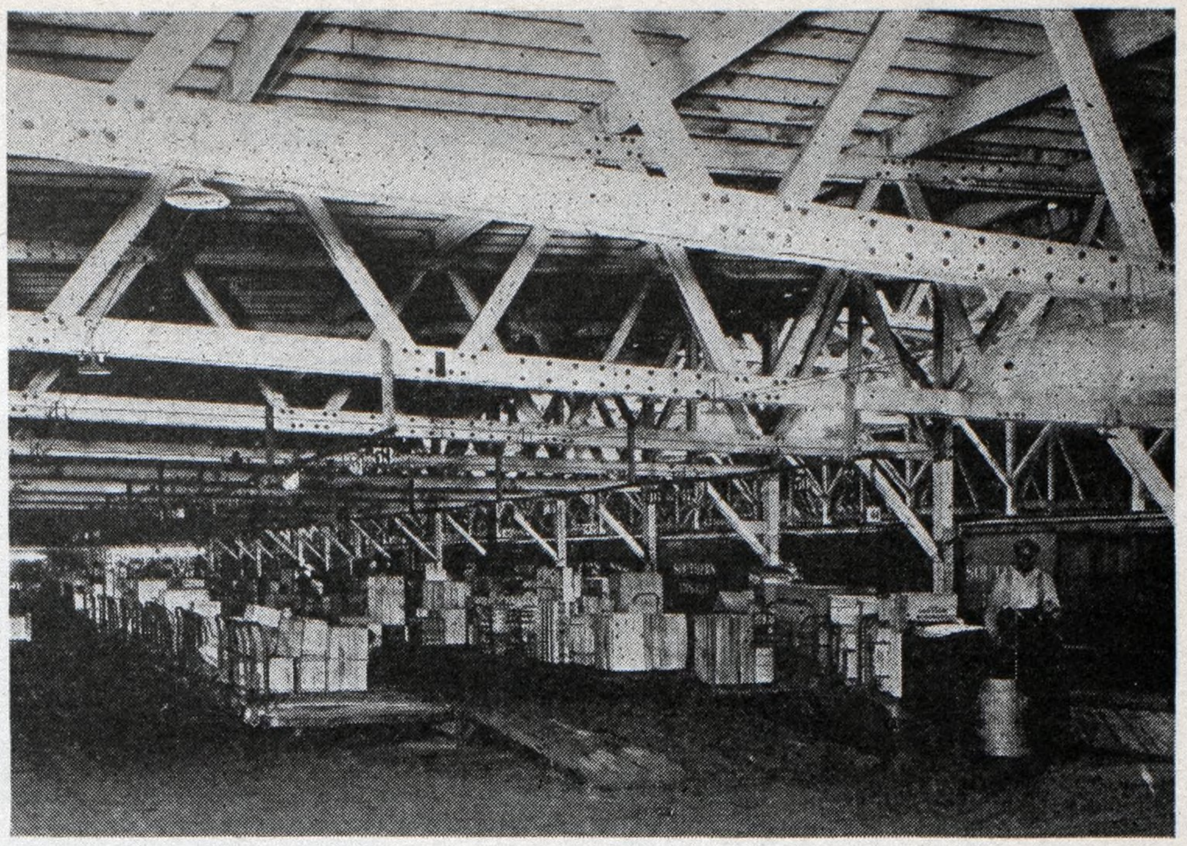
The new plan of separating marks and handling freight to cars was operated successfully from the first, as the accompanying table shows.

This covers the period during which the four tractors and 250 trailers and charging equipment paid for itself. The tonnage shown is for the entire terminal.

Two hundred additional trailers were added later.

Three hundred thousand dollars has been saved in the eight years that the tractors and trailers have been used in place of hand trucks at Pinner's Point and this after deducting the cost of the equipment. This profit resulted when obsolete methods and equipment were discarded for modern methods and equipment.

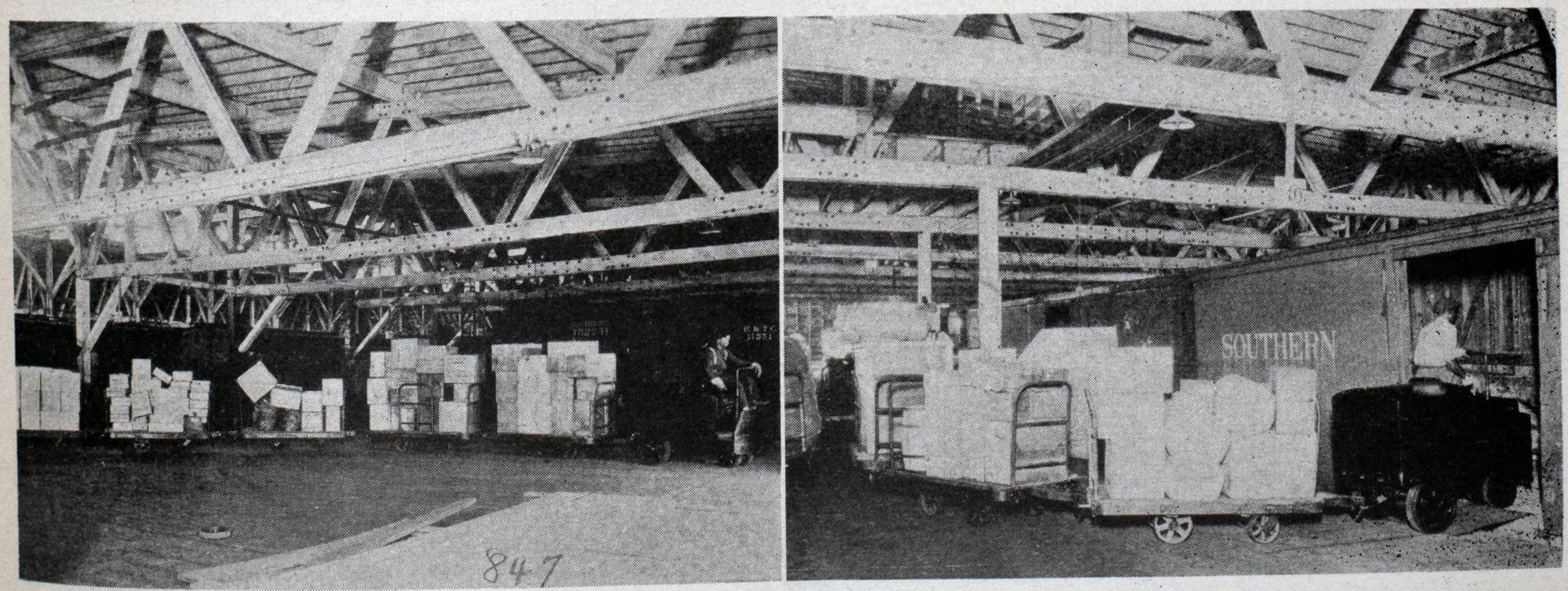
(*Continued on Page* 62)



Loaded Trailers Ready to Be Hauled to Cars—Transferring Freight from Steamer to Rails at Pinners Point, Va., Using Modern Equipment

Month	Tons	Previous cost per ton	Cost per ton by tractors	Amount saved and paid
May	37,572	.49	.38	$4,132.92
June	28,002	.49	.40	2,520.18
July	32,722	.49	.36	4,253.86
August	35,991	.49	.36	4,678.83
September	28,216	.49	.36	3,668.08
*October	34,939	.49	.39	1,240.47
November	45,170	.49	.3776	5,077.11
December	32,826	.49	.3922	3,210.39
January	43,793	.49	.3827	4,698.99
February Final payment to close the account				1,415.40
Equipment fully paid for				$34,896.23

*Deductions made for over payment in July, August and September, due to change in wage rate.



Marine Terminal of Southern Railway at Pinners Point Across from Norfolk, Va. Left—Trailers Being Hauled to Box Cars. Right—Trailer Train Taking Short Cut Through Spotted Cars to the Other Side of Pier

From Rail to Ship in a Modern Way

Bold Use of Mechanical Equipment for Handling Cargo—Reduces Cost and Speeds Up Operation at Norfolk Marine Terminal

THE Norfolk and Western railway's marine terminal at Norfolk, Va. is fully equipped and a well developed rail and water terminal. Over 500,000 tons of general cargo is handled annually over pier S of this terminal, while in addition, a large tonnage is handled over piers L and O.

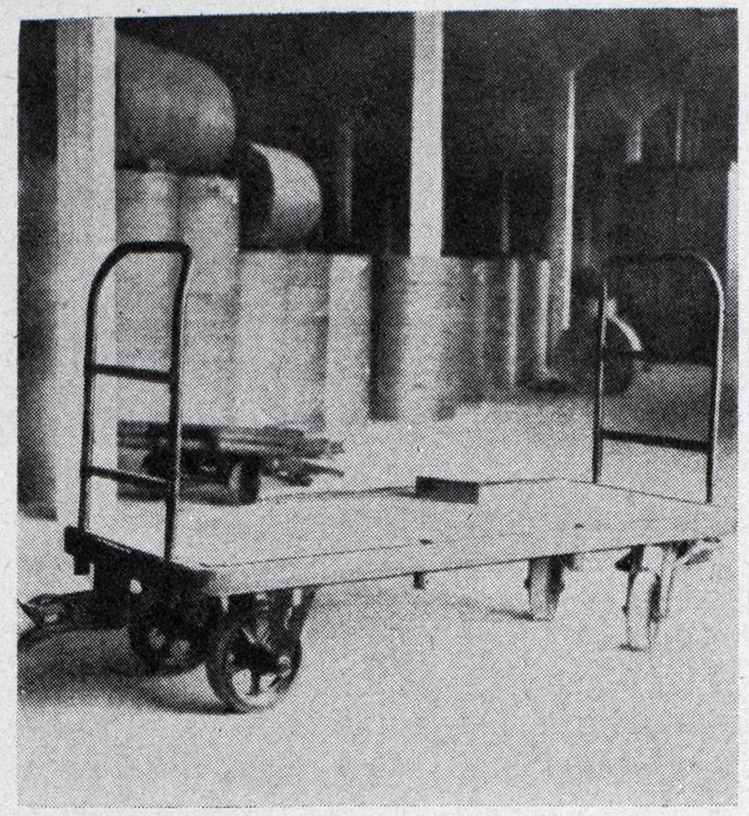
Pier S is used by the Eastern Steamship lines, the Philadelphia and Norfolk line, Chesapeake line and the Old Bay line. Barges deliver cargo from connecting railroads and industries located on the Elizabeth river and Hampton roads. These steamer lines have 26 sailings and arrivals each month. The Dimon line, Williams line and other off shore lines loading and discharging at the other two piers have a total of 121 sailings and arrivals a month.

Pier S is 220 feet wide by 1265 feet long, outside dimensions. It is served by four depressed tracks down the center of the pier. Four cross over drawbridges are provided to shorten trucking distances. The ships discharge and load cargo through side ports with the aid of cut gangways or drops fitted with permanent aprons which are lowered and raised mechanically. Escalators are provided in some of the gangways to assist trucks and trailers when the grade of the gangplank is severe. A steel runway is provided down each section of the pier to facalitate trucking.

Runways are in Good Condition

Good concrete runways connect pier S with the other two piers and with the warehouses located at the inshore end of the piers. Covered ways are provided so that freight can be handled between piers or warehouses without damage during inclement weather.

Pier L is 1200 feet by 220 feet.



Special Trailer for Handling Newsprint

There are two depressed tracks down the center and one surface track outside the shed on the east side. Pier O is 935 feet by 100 feet. A sprinkling system is provided throughout all the piers and warehouses.

The sugar warehouse is insulated with insulating board and is heated with unit heaters suspended from the roof so that the temperature may be kept at the proper degree for sugar storage.

Depressed tracks serve both sides of each warehouse. Awnings are provided over the doors which are spaced to match the doors of standard box cars. The floors of the warehouses are made of cement and are in very good condition.

The steamer lines using pier S are supposed to place the freight on the floor of the pier where it is to be picked up later by the railroad gangs and moved into the cars. The railroad company, however, cooperates by loaning trailers to the steamer lines for loading in the ship. The trailers are then taken out of the side ports to the pier where they are made up into trailer trains. This last operation is greatly facilitated because of the automatic couplers with which the trailers are equipped. When the trailer train is complete a gasoline tractor hauls the train down the pier to a warehouse. There the trailers are loaded direct into cars or to the floor of the warehouse.

Sugar Handled Mechanically

Inbound shipments of refined sugar are dropped directly on to trailers at ship's tackle. On reaching the warehouse the bags are piled with the new screw type conveyor described in the May issue of the MARINE REVIEW.

The bags are taken from the trailers and dropped on the spirals which move them quickly and safely as much as 100 feet. This equipment has made it possible to pile bags of sugar 24 high at a cost of 5 cents a ton. When sugar was handled by hand the cost for piling was from 18 to 25 cents.

A large quantity of newsprint is handled at the terminal. The rolls are brought from the ship on specially designed trailers 3 feet by 7 feet by 8 inches high. These trailers are fitted with automatic couplers in such a way that the newsprint trailers and the standard trailers, which are 14 inches high, may be handled in the same train.

The rolls of newsprint are loaded on to the trailers with a scoop type two wheel hand truck similar to the truck described on another page in this issue. The truck picks up a roll and the truck is put down alongside the trailer and the roll is then pushed on to the trailer. The operation is reversed at the warehouse. When lack of space makes it necessary to pile the rolls, an electric crane truck of 3000 pound capacity at 8½ feet, is used. Plugs of various sizes are provided for the various size rolls. These are placed in the core hole and the roll lifted in a horizontal position. The rolls are stored in this position. The operation described is reversed when the newsprint is moved from storage to cars.

Seven gasoline tractors and 1000 trailers are operated on the Norfolk and Western terminal. The tractors have an overall turning radius of only 51 inches. This small turning radius makes possible maneuvering in the restricted places that exist on a busy terminal. With the exception of 150 trailers which are used for handling newsprint, the trailers are of the standard 3 by 6 feet size.

The trailers are used in handling

Tractor Trailer Train on Pier S. of the Norfolk & Western Marine Terminal at Norfolk, Va. Note Steel Runway

cargo from the lower hold as well as from the 'tweendeck of the ships. Trailers are moved through the side ports and then are dropped into the lower hold with a sling that catches the trailer floor between the end of the trailer and the wheels. A spreader keeps the sling from damaging packages. Escalators are used if a steep gangplank is encountered. The escalator catches the rear axle of the trailer and brings it up the incline without the delay experienced when handled by hand.

The Eastern Steamship lines has two gasoline tractors with trailer equipment which is used in handling freight for local delivery to and from the warehouse located at the inshore end of pier S.

A terminal so well equipped as the Norfolk and Western marine terminal makes possible the handling of freight most economically.

Belt conveyors are used at Houston, Texas, in handling coffee from shipside to warehouse where marks are separated. By doing this work in the warehouse the wharf is released for other cargo. Also this makes it possible to use warehouse labor.

The Isle of Pine Steamship Co. handles blocks of marble weighing up to five tons by means of a hand lift truck. One man can lift a five-ton block of marble with this equipment.

Side ports can be worked safely in any weather by covering gang plank with a canvas tunnel. This is a distinct advantage as compared with handling cargo overall.

One steamship line eliminated cement claims by using a box sling and stowing bags in sling on end.

Mechanical equipment makes possible better utilization of terminal space because cargo can be hauled long distances economically.

"It pays to teach men best methods by which work can be done. This is in strict accord with all human experience. . . ." Dexter Kimball, *Principles of Industrial Organization.*

Consider Nature of Cargo in Arranging Stowage

BARRELS become leaky when exposed to heat and should therefore not be stowed adjacent to boiler and engine rooms. In the intercoastal trade, barrels should be stowed bilge and cantline in the lower holds. This will be found to be the coolest place in this trade as the temperature of the water never exceeds 80 while that of the air may at times reach 105. When the sun strikes the steel decks continuously all day long the temperature may reach 120 underneath the main deck of the ship.

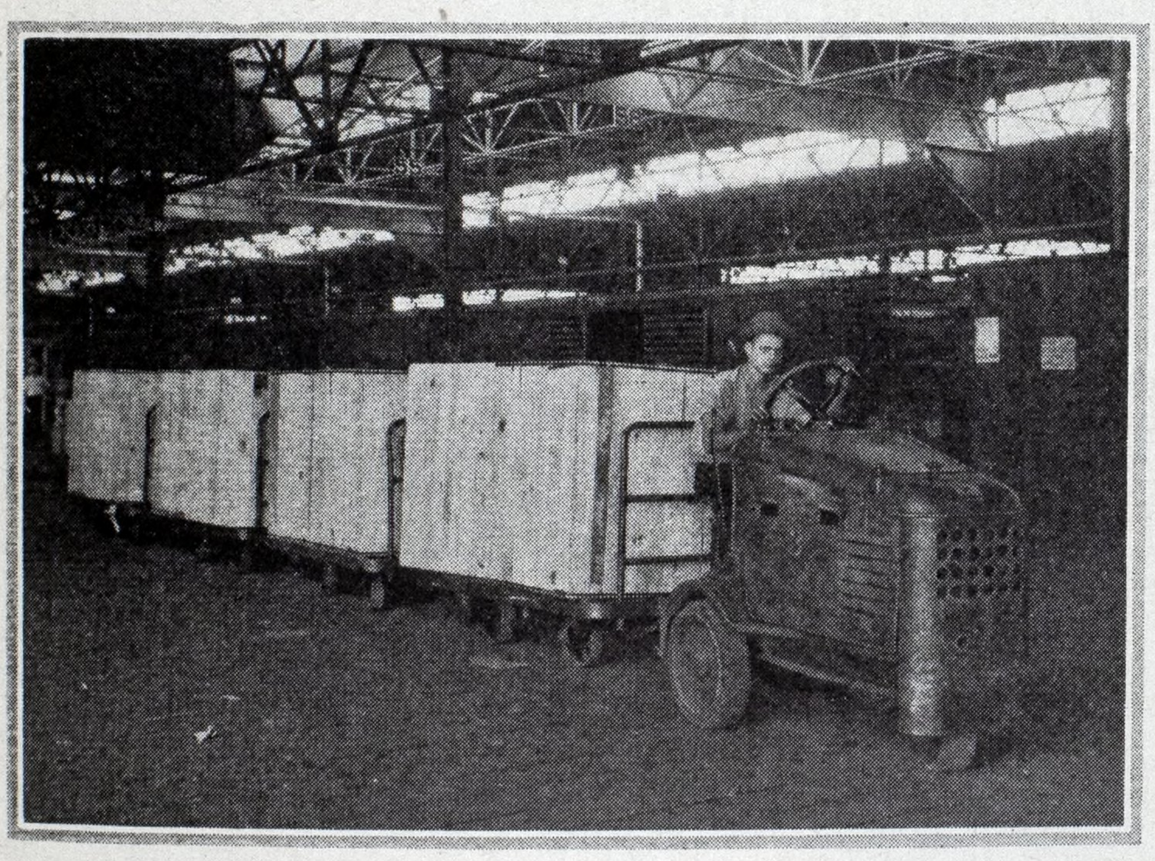
Edible oils should always be stowed above inedible oils. Highly inflammable, volatile oils (even in drums) must never be stowed in holds adjacent to boiler and engine rooms. On new vessels in the trade it is worth while to verify that there is no bilge connection between cargo holds and boiler rooms. It is not advisable to stow case oil together with barrel oil because the light wooden cases are sure to be damaged by the handling of the heavy barrels.

Deep tanks are always inadequately ventilated and are not suitable for barrelled goods; neither is a bridge deck through which a boiler and engine room casing passes. Volatile, suffocating liquids (ether and chloroform) should not be stowed in the holds because the suffocating effects may cause injury to persons and delay in discharging. The best place is the poop or underneath the forecastle head if there are no living quarters there.

In separating dry and wet cargo, sufficient dunnage should be used and the dry cargo should be stowed in such a way that the drainage of the wet cargo may pass safely underneath without causing damage. Serious and heavy damages to cargo are often inexcusably caused by disregarding this rule.

Hides are susceptible to damage by iron rust and contact with metal such as copper. During stowage, precaution should be taken to cover all iron with matting or dunnage. Hides require good ventilation and must under no circumstances be stowed in the vicinity of bulkheads adjacent to boiler and engine rooms, nor in the bridge deck spaces. Cargo susceptable to damage by the odor of hides should not be stowed in the same compartment.

Gasoline Tractor and Train of Trailers Hauling Refined Sugar at the Marine Terminal of the Norfolk & Western at Norfolk. Note the Concrete Runway



On the Piers of the Norfolk & Western Railway at Norfolk, Va., Tractors and Trailers Are Used to Handle Many Different Classes of Cargo

---

The cost of tiering sugar was cut 60 per cent on a terminal at Portland, Oreg., by the use of an electric conveyor.

Obsolete equipment is not an asset. It is a liability because each time it is used it is a drain on profits as compared with the use of the best modern equipment.

Salt water and sulphur form sulphuric acid when they combine. This corrosive fluid does much damage to ships carrying sulphur unless proper precaution is taken. To prevent damage in the bilges it is advisable to use lime which neutralizes the acid.

Painting traffic lanes on the floors of factories has proved effective as a part of a program to eliminate hazards in materials handling. It has been suggested that marking permanent gangways on marine terminals would assist in reducing accidents.

Cargo Handling Is Made Easy on the S. S. Morro Castle

THE MORRO CASTLE completed recently by the Newport News Shipbuilding & Dry Dock Co. for the Ward line has nine side ports for cargo in addition to four side ports for handling passengers and stores.

The type and number of cargo ports, location and size, as well as passenger ports and ports for handling stores, are shown below.

Type	Location	No.	Clear Opening
Cargo triple	Main Dk.	2	8′-0″ x 6′-9″
Cargo double	Upper Dk.	7	8′-0″ x 7′-6″
Pass. quad.	Bri. Dk.	1	8′-6″ x 7′-0″
Pass. quad.	Shelter Dk.	1	7′-0″ x 7′-0″
Stores dutch	Upper Dk.	2	4′-0″ x 6′-0″

The doors for the double ports are in two pieces split vertically on the centerline and arranged to swing outboard, one forward and one aft. The doors that are in three pieces are split horizontally on the centerline and have the lower half split vertically on the centerline, arranged to swing outward, forward and aft. The upper part of the door is arranged to swing up.

The quadruple doors are split horizontally and vertically on the centerline with all pieces opening outboard, two forward, two aft.

The hatches in the MORRO CASTLE are seven in number. Two of them are weather deck hatches, the remainder being blind hatches. The size, and location of the various hatches are given in the adjoining table.

The MORRO CASTLE has a total of 6 booms for the two weather deck hatches. There is one 5-ton steel boom at No. 1 hatch, which is 35 feet long and two booms of the same capacity and construction which are 52 feet in length. At No. 2 hatch there are two five ton steel booms, 52 feet long and a heavy lift boom, rated at 25 tons, which is 56 feet long.

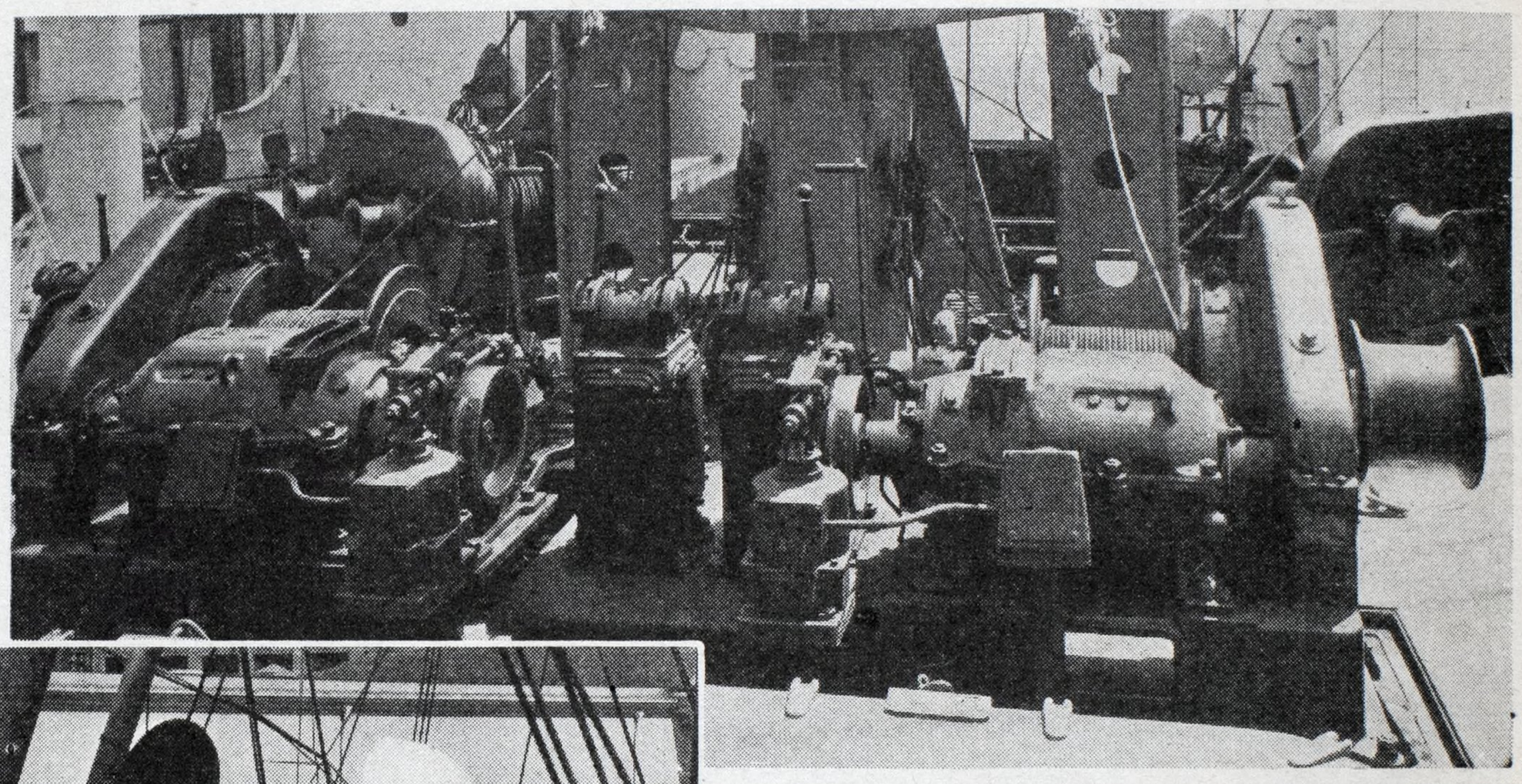
The blind hatches are served by two cargo arm cranes at each hatch.

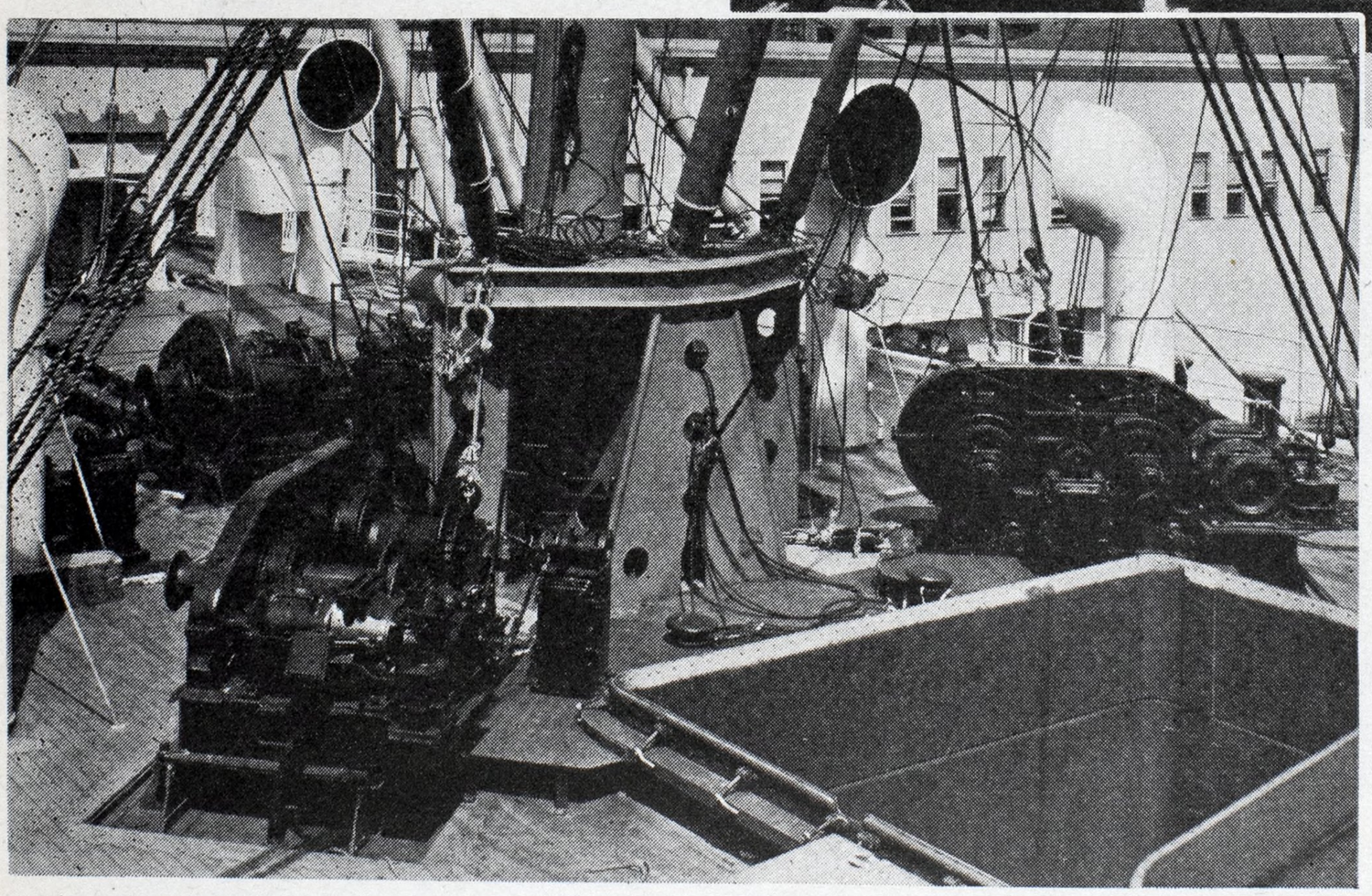
All 'tween deck hatches are fitted with a steel plate brow with spruce filler welded in place all around the hatch except in the way of winches. This facilitates handling freight from the hatch to the wings and fore and aft parts of the decks.

The hatch covers of No. 1 hatch weather deck are of steel construction built in one piece and hinged up forward. The No. 2 weather deck hatch cover is also of steel but is divided in two pieces with forward third hinged up and aft on the after two-thirds which is hinged up and aft. Both hatches are fitted with small trap hatches 24 x 24 inches.

The number of electric winches provided together with type and location, are shown in table below:

No.	Type	Location	
2	Single drum	Aft. No. 1 h'ch.	Fcstle Dk.
2	Dble. drum	Ford No. 2 h'ch.	Fcstle Dk.
2	Sgle. drum	Aft. No. 3 h'ch.	Upper Dk.
2	Sgle. drum	Ford. No. 4 h'ch.	Upper Dk.
2	Sgle. drum	Aft. No. 5 h'ch.	Upper Dk.
2	Sgle. drum	Ford. No. 6 h'ch.	Upper Dk.
2	Sgle. drum	Aft. No. 7 h'ch.	Upper Dk.





Recently Completed Turbine Electric Liner Morro Castle—Electric Winches at Nos. 1 and 2 Hatches—Motors and Controls by Westinghouse—Note Steel Hatch Covers and Boom Arrangements

Winches at No. 1 Hatch on Morro Castle Made by Lidgerwood Mfg. Co.

Hatch No.	Size	Location and Remarks
1	15′-9″ x 12′-0″	Forecastle, trunked to Shelter, Upper
1	15′-9″ x 10′-0″	Main, Lower
2	20′-9″ x 16′-0″	Forecastle, trunked to Shelter
2	23′-6″ x 16′-0″	Upper, Main
2	23′-6″ x 14′-0″	Lower
3	11′-0″ x 18′-0″	Upper, Main, Lower
4	11′-0″ x 18′-0″	Upper, Main
4	11′-0″ x 13′-6″	Lower
5	11′-0″ x 18′-0″	Upper, Main
5	11′-0″ x 13′-6″	Lower
6	11′-0″ x 18′-0″	Upper, Main
6	11′-0″ x 13′-6″	Lower
7	11′-0″ x 18′-0″	Upper, Main
7	10′-6″ x 11′-0″	Lower

Name New Matson Liners

The new Matson liners building at the Fore river yard of the Bethlehem Shipbuilding Corp. will be named MONTEREY and MARIPOSA. The vessels will be completed in February and June, 1932 and will have a speed of more than 20 knots and accommodations for more than 800 passengers.

Contract was recently awarded C. A. Parsons & Co., Ltd., Heaton, Newcastle, for making blades for the turbines of the new Cunard super liner. Fifty tons of blades will be required.

Destroyers to be Scrapped

The navy department recently announced that 58 destroyers, worn out in active service and displaced in efficiency by more modern fighting ships of this class, will be stripped and scrapped. These destroyers represent an average original cost of $1,000,000 each or approximately $58,000,000, while it is estimated that they will command a scrapping value of $5000 each or about $290,000. The vessels decommissioned are at the Mare Island and Philadelphia navy yards.

Useful Hints on Cargo Handling

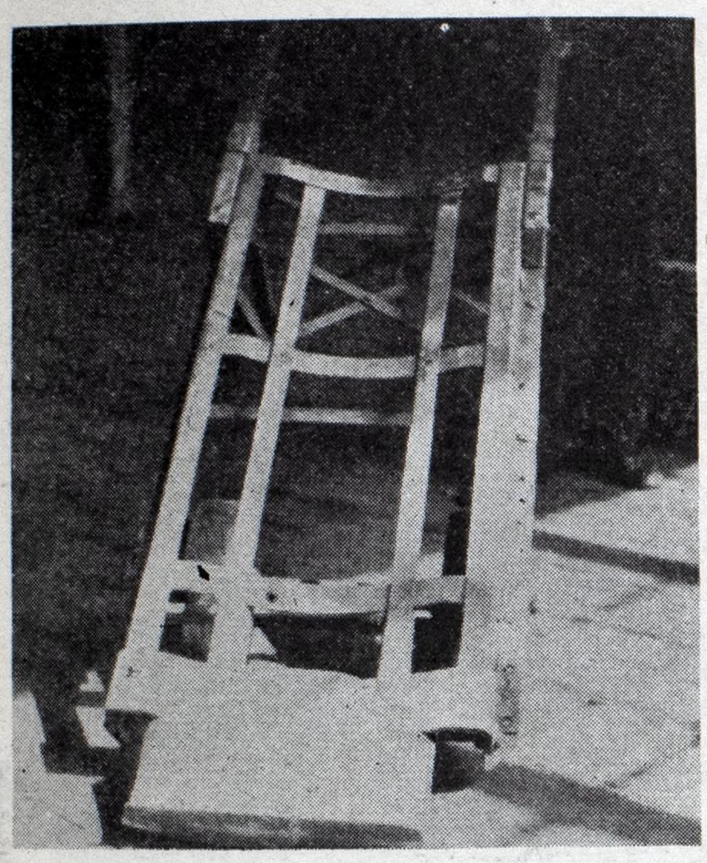
THIS page is to be devoted to short items on all matters having to do with the more efficient turn-around of ships. These items are intended to be of a practical nature.

We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.

A NEW York steamship company which uses load carrying electric trucks on its pier has found a method of utilizing these trucks for piling cargo. An ordinary portable ramp or skid is propped up at the proper angle against the cargo already in the pile. The loaded truck is then run up the ramp and brakes are applied. It is then unloaded. This method saves a good deal of back breaking labor as well as reducing costs.

Tobacco should not be stowed with sugar or any cargo with odors.

The Church E. Gates Co. New York, report a decrease in handling costs from $1.80 to 21 cents per 100 feet by



New Truck for Newsprint Rolls

handling lumber in unit packages. The units of lumber usually contain 2000 feet. This method of handling lumber reduces pilferage losses.

Loading Time Reduced

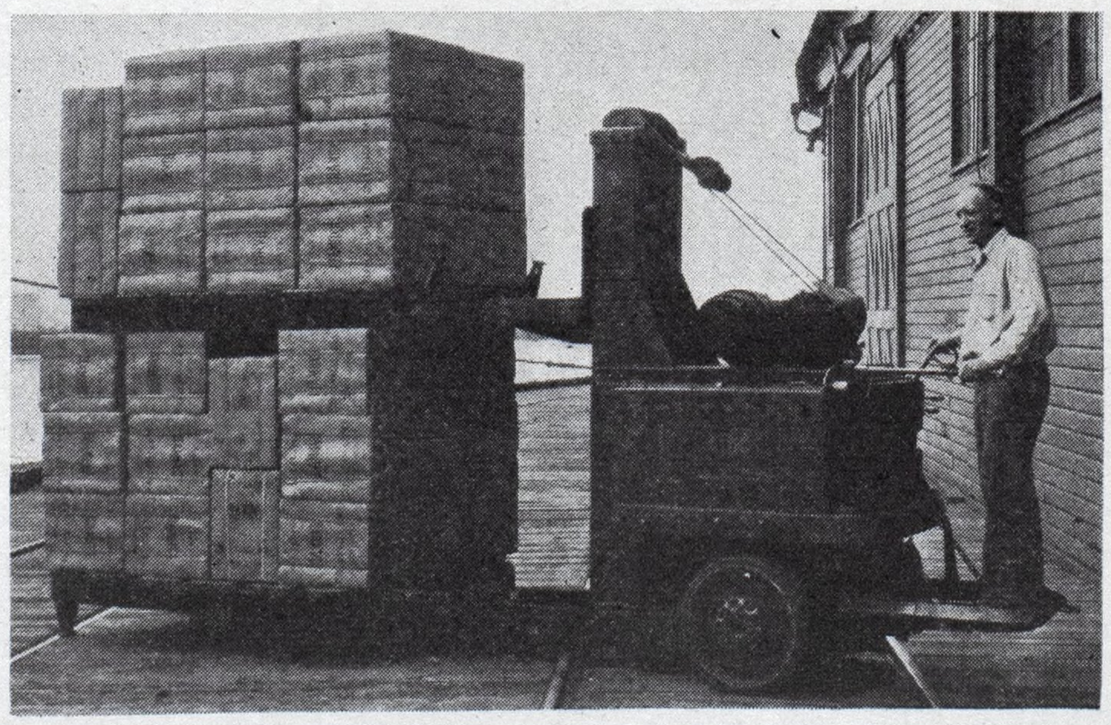
A REPORT from Seattle, Wash. shows that 13 men with hand trucks using a Barlow ship elevator loaded 250 tons of cement in five hours into the hold of the S. S. CITY OF HONOLULU. Without the elevator 22 men require 7½ hours to load 250 tons of cement, that is 1.5 tons per man hour versus 3.8 tons per man hour. On a terminal at Powell River, B. C., where there is a 28-foot tide, a Barlow elevator replaced an adjustable inclined gangplank with a resulting reduction in loading time of 25 per cent and a corresponding decrease in loading costs. A card index is kept by one company recording truck number, date truck was lubricated and date and nature of repairs. This information affords an opportunity to investigate why any truck must be repeatedly oiled or repaired.

Time is lost in some cases by not foreseeing the need for dunnage. A gang is held up while dunnage is brought to place needed. A plentiful supply of dunnage, available at all times would accelerate work. Proper planning of work is one of the easiest ways to more profits.

Where Cleanliness Pays

CLEANLINESS and orderliness on piers, in ships holds and on deck is both economical of material and a means of reducing accidents. In shipyards which were as disorderly formerly as any industry, the cleanliness and orderliness feature of modern American management has been adopted with good results. In one shipyard, the Newport News Shipbuilding & Drydock Co., it was found that it cost $12,000 less a year for cleaning expenses after the yard was put in good order and cleanliness was insisted upon. This company paints the interiors of its blacksmith shop and foundry white as a part of this plan. Far more important than the money saving has been the effect on the morale of the organization. Clean and orderly working conditions were found to improve workmanship.

Sugar should not be loaded where it is liable to absorb moisture or odors.

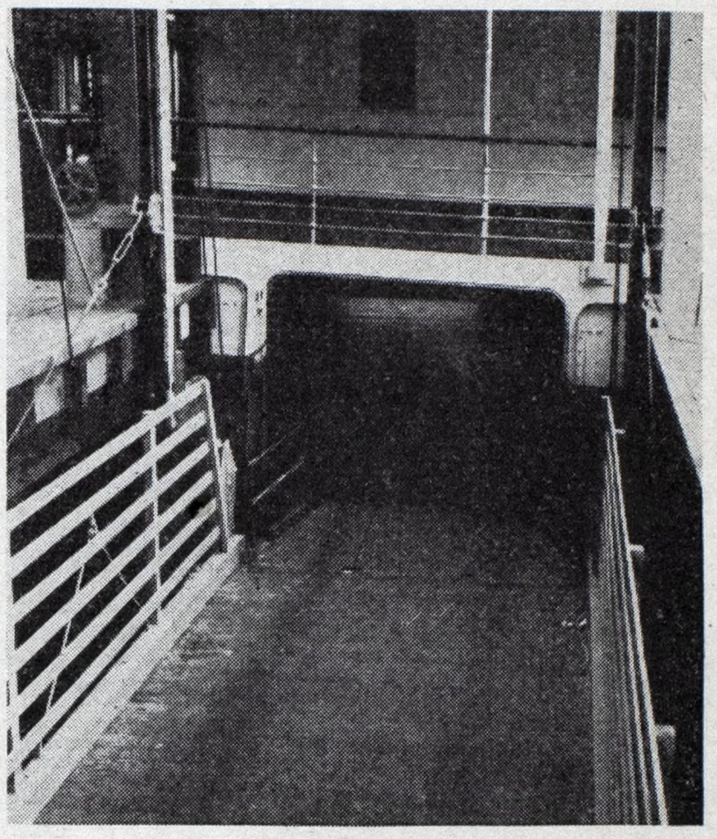


Used as a Skid as Well as a Platform Sling

An Interchangeable Skid

THE illustration at the bottom of the page shows a recently developed new type of skid. It is a skid which can be interchanged between rail and shipping lines with the least difficulty.

Formerly when hoisting skids into a ship, some provision had to be made to prevent the legs of the skid damaging cargo on which the skids



Barlow Elevator at Seattle Dock

were landed. The new type skid has legs which turn up and which are used to attach the ships sling. Holes through the end of each leg receive the sling books. When the skid is landed on cargo in the hold the weight of the skid and its load is carried on the two longitudinal pieces of the frame which are 4½ inches wide and 6 inches deep.

The six inch underneath clearance with legs turned up makes it possible for the skids to be tiered easily in the warehouse with a power high lift truck or a hand lift truck and a portable elevator. The platform of the skid is four feet six inches by 6 feet and has a twelve-inch underneath clearance when the legs are down. The platform frame is of angle iron bent at the corners to a four-inch radius. The platform is of dense grade structural fir air dried. This skid does away with objections met with under service.

Up and Down the Great Lakes

Re-argue Joint Rail and Lake Rates—Traffic on Lakes Grows—Ore Shipments Drop—August Lake Levels—Coal Movement Heavy—Set New Record for Dumping Coal—More Wheat Shipped

RE-ARGUMENT of the joint rail and lake rates case between Chicago and the East is being urged by the Chicago association of commerce in a petition to the international commerce commission at Washington. The petition maintains that the present joint rates, when compared with all-rail schedules, are out of line with the expressed policies of the executive and legislative branches of the federal government. It is stated also that until a fair adjustment is made Chicago district industries will be deprived of the full economic benefits of water transportation.

The rates now in use were passed upon by the commission when it conducted the Eastern class rate investigation. It is the position of the association of commerce that, due to the magnitude of these proceedings, which involved all class rates for territory East of the Mississippi and North of the Ohio and Potomac rivers. Chicago's position in joint water and rail affairs received scant consideration.

Lake Commerce Increases

Duluth and Superior ports led all the Great Lakes ports in the total tonnage of freight handled during the period from 1919 to 1928, according to a report of the army board of engineers and the United States shipping board. Buffalo ranked second in tonnage, and the port of Chicago ranked third.

The report adds that Ashtabula, Toledo, Cleveland, Conneaut, Calcite, Ashland, Milwaukee, Agate Bay, Lorain, Escanaba, Detroit, Sandusky, Gary, Indiana Harbor, Fairport, Erie and Ludington, Mich., follow in order. The report also disclosed that since 1925 the combined traffic of all Great Lakes ports had grown from 130,000,000 short tons to 150,000,000 short tons in 1928.

Ore Receipts Drop

The report of the Lake Superior Iron Ore association, issued Sept. 8 showed that receipts of iron ore at Lake Erie ports amounted to 5,585,515 tons as compared with 7,517,962 tons for the same month last year. Seasonal receipts to Sept. 1 also showed a decline, there being 21,683,307 tons received at Lake Erie ports compared with 29,956,346 for the same period last year. Shipments from Lake Erie docks to interior furnaces also showed a decrease both for the month of August and the season. During August of this year there were 3,725,382 tons moved as against 5,213,295 for August a year ago. During this season to Sept. 1, 16,186,011 tons were shipped compared with 22,395,864 for last season.

August Lake Levels

The United States Lake survey reports the monthly mean stages of the Great Lakes for the month of August as follows:

Lakes	Feet above mean sea level
Superior	602.98
Michigan-Huron	581.12
St. Clair	575.98
Erie	573.05
Ontario	247.46

Lake Superior was at the same level as in July and it was 0.11 foot higher than the August stage of a year ago. Lakes Michigan-Huron were 0.16 foot lower than in July and they were 1.08 feet lower than the August stage of a year ago. Lake Erie was 0.43 foot lower than in July and it is 0.73 foot lower than the August stage of a year ago. Lake Ontario was 0.63 foot lower than in July (since 1860 the August level has averaged 0.30 foot lower than July); and it was 0.54 foot lower than the August stage of a year ago, 1.47 feet above the average stage of August of the last ten years.

Open Welland Canal

On Sept. 10 at 7 a.m., the new Welland canal was opened for navigation. The first steamer to lock through was the GEORGIAN with a cargo of flour and wheat from Fort William to Toronto.

Excursion Traffic Drops

Great Lakes transportation companies finished the summer excursion season on Labor day with traffic totals slightly under those of the last few years.

The season opened auspiciously with comfortable advance bookings by most of the transportation companies. As the summer advanced, the excursion traffic failed to gain in the proportion that had been expected. Lake steamship lines report, however, that the carrying of tourists' automobiles was up to the increases reported in the last few years. Many vacation travellers showed a desire to go part way by boat, or becoming tired of motor travel took advantage of steamship facilities for transporting their cars to the home ports.

The Labor day holiday was disappointing to many of the excursion lines on the Great Lakes. This was due to uncertain weather which undoubtedly lessened traffic. Excursions were not well patronized a year ago, when the weather was much more disappointing than this year.

New Coal Dumping Record

A new coal-dumping record was established recently at the New York Central south car dumper at Toledo. This new record was made in loading the steamer THOMAS F. COLE of the Pittsburgh Steamship Co. on Sunday, Aug. 24 when a total of 243 cars were dumped into the boat in four hours and twelve and a half minutes. The former record was 53 cars per hour compared with the new record of 57¾ cars per hour. The dumper used at the Toledo dock is electrically operated and is managed by Pickands, Mather & Co., Cleveland.

August Wheat Shipments

According to a report issued Sept. 16 by the Lake Shippers Clearance association, approximately 10,000,000 bushels more wheat were shipped during August this year from elevators at Fort William-Port Arthur than during the same month in 1929. During August of this year 16,103,985 bushels were shipped as compared with 6,486,658 for the same month last year. Of the total tonnage brought down during the month this year, 6,249,958 bushels were carried in 21 American ships to American ports while 9,098,901 were carried in 62 vessels of Canadian registry to Canadian ports. The balance was carried in 4 Canadian boats to American ports.

Coal Movement Heavy

Shipments of coal have been going ahead at a rapid pace and for the week ending Sept. 8 shipments fell only slightly below what they were for the same week last year. Up to Sept. 8, 988,838 cargo and 37,413 fuel tons were dumped making a total of 1,026,251, compared with a total of 1,129,251 tons for the same period in 1929.

Forced Lubrication System on Steamer Wm. G. Clyde

By J. C. Workman

THE steamer WM. G. CLYDE built in 1929 by The American Ship Building Co., at the Lorain plant, is a bulk ore carrier of 12,000 tons capacity. Her dimensions are 604 feet 0 inches in length over all, 580 feet 0 inches in length between perpendiculars, 60 feet 0 inches in beam and 32 feet 0 inches in depth.

She is propelled by a vertical triple expansion engine 24½ x 41 x 65 inches x 42 inches stroke operating under 190 pounds steam pressure and developing 3058 indicated horsepower at full load at 101½ revolutions per minute. Normal operation is at about 2100 indicated horsepower and 84 revolutions per minute.

It was decided by the owners to apply forced lubrication on this steamer and the results have been very satisfactory.

The engine was run recently at a full speed test for sixteen hours at her maximum revolutions per minute of 101½. The new oiling system functioned with entire satisfaction and without any attention being given it by the oilers as it had proved by past experience that this was not necessary.

Main bearings, crank pins and crossheads are subjected to lubrication under positive pressure of 20 pounds per square inch by means of a gravity system. The tanks, two in number are located at the top of engine compound. The tanks each have a capacity of 155 gallons, only one being in commission at a time. These tanks are also piped to all the other parts of the engine which are supplied by a drip system as shown on the plans. They also supply the fan engine and main ballast pumps. The oil is received in the sump under engine bedplate; from there it is pumped by a Viking motor driven pump direct to the DeLaval purifier of 200 gallons maximum capacity.

The purifier draws into a 170-gallon clean oil tank below where it can be pumped into either service tank as desired.

A large lubricating storage tank, of 350 gallons capacity, is located below the main deck in a convenient place, so barrels of oil can be discharged into same through connection at main deck. The oil is cooled by a cooler just below the service tanks on its way to supply the engine.

It was necessary at first to purify all the oil used, until all the foreign matter was worked out of the system; now it is only purified at intervals. Samples are frequently taken to guard against impure oil.

With this system of lubrication the engine is completely enclosed to a point about up to the operating platform. Deadlights are placed in the front and side of the engine so the moving parts can be observed.

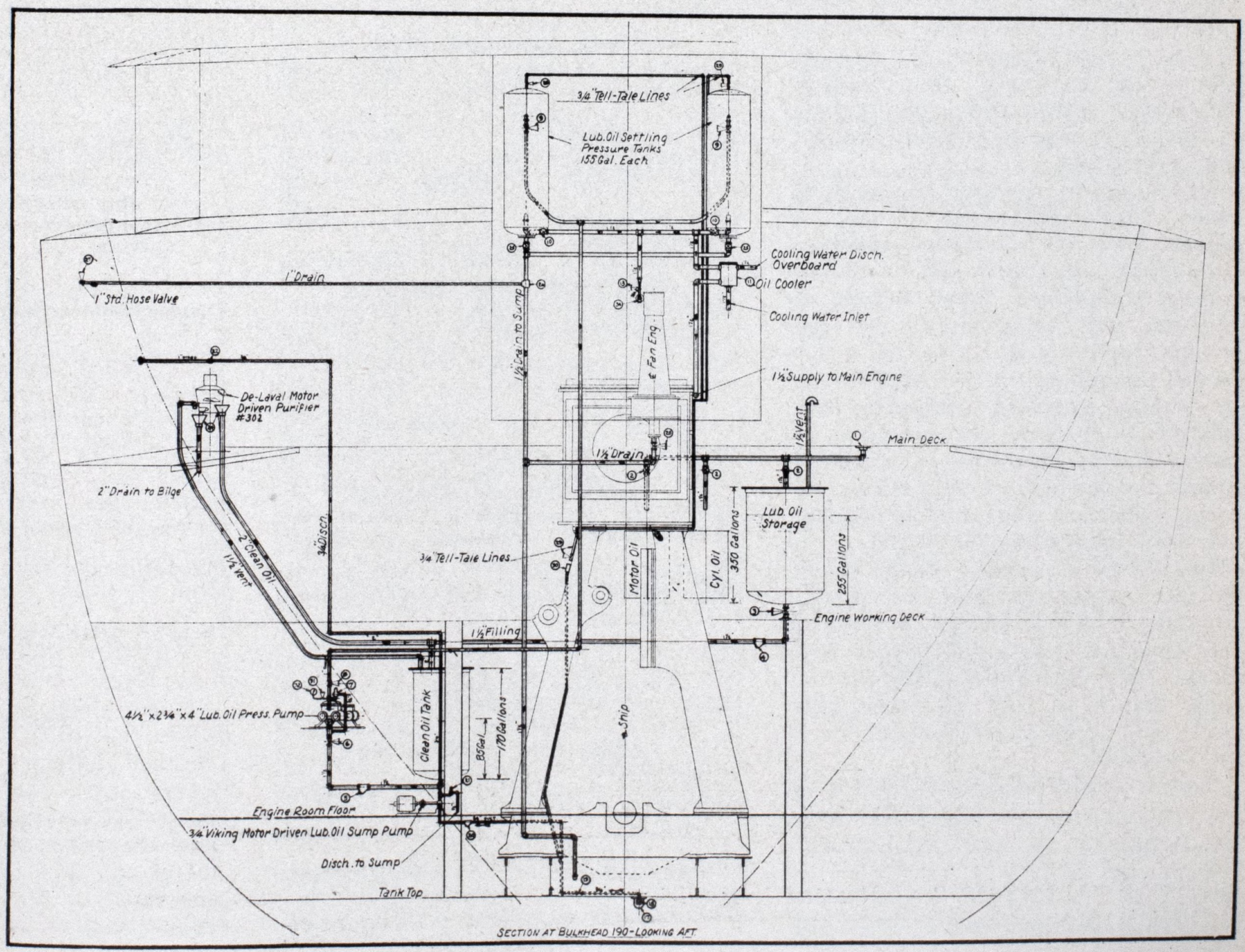
Advantages of the system are:

1. Long life of all bearings as the wear is at a minimum.
2. No loss of time due to heated bearings as the human element is eliminated to a large degree.
3. Less upkeep and overhaul at the close of operating season.
4. Less oil used if system is kept tight.
5. Less friction in engine bearings because large quantities of oil can be used as it is all recovered, purified and returned to the service tanks.

The author, J. C. Workman, is chief engineer of the American Ship Building Co., Cleveland.

Coamo Battered by Hurricane

The New York & Porto Rico liner COAMO docked in New York on Sept. 10 after an eventful voyage to San Juan during which she encountered the hurricane that devastated the city of Santo Domingo. Her lifeboats were broken, skylights and portholes shattered and rails bent, indicating the effects of her struggle with the storm. That she escaped more serious damage is considered a testimonial to the skill of her navigating officers and her own seaworthiness.



SECTIONAL general arrangement of forced lubrication system installed on the Great Lakes Bulk Freighter Wm. G. Clyde owned by the Pittsburgh Steamship Co. This method of lubrication for a triple expansion steam engine was developed jointly by the engineers of the American Ship Building Co. and the shore engineers staff of the owner. Observation after months of actual service demonstrates its value both in certainty of operation and saving in oil.

Shipping Board Makes Survey of Ocean Marine Insurance

THE bureau of finance, United States shipping board, has just completed a survey of marine insurance written by American and foreign companies in the United States during the calendar year 1929. Reports from all companies have been compiled, and total figures are given as follows:

Gross premiums received $60,442,000; net premiums, $51,746,000. Of the total reinsurance, $8,696,000 went out of the United States. In other words, 14 per cent of gross insurance premiums paid in this country eventually found its way out, leaving 86 per cent as net premiums in the United States.

Seventy American companies and 34 foreign companies are included in this compilation, representing practically all companies writing ocean marine insurance in the United States.

American insurance companies reported $43,315,000 gross premiums, 38 per cent for hull and 62 per cent for cargo insurance. On hull insurance $11,000,000 was distributed as reinsurance, of which about $2,000,000 went to foreign non-admitted companies. About $18,000,000 was ceded as cargo reinsurance, of which $3,610,000 went to foreign non-admitted companies. Foreign insurance companies doing business in the United States reported $17,127,000 gross premiums of which approximately 72 per cent was cargo insurance. Of a total of $16,521,000 reinsurance, approximately $3,000,000 went to non-admitted foreign companies.

Gross figures reported as above include reinsurance ceded to and received from the various reporting companies, American and admitted foreign companies. After making deductions for reinsurance, net premiums received by American companies amounted to $37,730,000, and by foreign admitted companies $14,016,000, or a total net premium on ocean marine insurance (excluding inland navigation) of $51,746,000. Net cargo premiums amounted to $32,337,000, hull premiums $19,409,000.

One of the surprising results shown by the compilation was the relative amounts of hull insurance written by the American Marine Insurance Syndicate "C" (which has generally become known as the "American Market"), and amounts written outside of the syndicate.

The syndicate reports $8,000,000 in net premiums on ocean and lake hull; net premiums on hulls written outside of the syndicate amounted to more than $11,000,000. Investigation disclosed that insurance written outside of the syndicate, covered fishing vessels by certain New England companies, and pleasure yachts by Atlantic and Pacific companies. This is not generally considered as "ocean hull" business, but amounts to a very considerable sum and is written mostly by American companies. Also, the premiums "outside of syndicate," include the shipping board insurance fund, over a million dollars premiums written in 1929.

The syndicate is an authorized combination of insurance companies to provide a ready market for American owned ocean going hulls. Its business is written and managed by a central office in New York. It accepts risks on hulls and distributes this risk on a pro rata basis among the companies in the syndicate. Both American and foreign admitted companies are included, and the distribution of policy risks is made on an equal basis so far as premium rates are concerned. During 1929 the syndicate distributed its business as between 43 American insurance companies and 27 foreign admitted companies.

The director of bureau of finance has made the following summary showing gross reinsurance and net premiums for all companies writing ocean marine insurance in United States:

Insurance Premiums Reported

American Companies	$67,256,000
Reinsurance (Deduct)	29,526,000
Net premiums	$37,730,000
Foreign Companies	$30,537,000
Reinsurance (Deduct)	16,521,000
Net Premiums	$14,016,000
Net Insurance Premiums—American & Foreign	$51,746,000

Cargo Premiums Reported

American Companies	$41,803,000
Reinsurance (Deduct)	18,509,000
Net Cargo Premiums	$23,294,000
Foreign Companies	$22,209,000
Reinsurance	13,166,000
Net Cargo Premiums	$ 9,043,000
Net Total Cargo Premiums	$32,337,000

Hull Premiums Reported

American Companies	$25,453,000
Reinsurance (Deduct)	11,017,000
Net Hull Premiums	$14,436,000
Foreign Companies	$ 8,328,000
Reinsurance	3,355,000
Net For. Hull Premiums	$ 4,973,000
Net Total Hull Premiums	$19,409,000
NET TOTAL CARGO AND HULL PREMIUMS	$51,746,000

American Companies

Reinsurance on Hull with American Companies	$ 5,358,000
Foreign Admitted Companies	3,684,000
Foreign Non-Admitted Companies	1,975,000
Total Hull	$11,017,000
Reinsurance on Cargo with American Companies	$ 9,140,000
Foreign Admitted Companies	5,759,000
Foreign Non-Admitted Companies	3,610,000
Total Cargo	$18,509,000

Foreign Companies

Reinsurance on Hull with American Companies	$ 1,448,000
Foreign Admitted Companies	1,068,000
Foreign Non-Admitted Companies	839,000
Total Hull	$ 3,355,000
Reinsurance on Cargo with American Companies	$ 5,531,000
Foreign Admitted Companies	5,363,000
Foreign Non-Admitted Companies	2,272,000
Total Cargo	$13,166,000

Questionnaire reported full amount of insurance written direct or as reinsurance, without deduction for reinsurance ceded to other companies.

As the various companies reinsured with each other, it is obvious that reinsured amounts were duplicated in total compilations. This applied for all American and admitted foreign companies.

However, where reinsurance was with foreign non-admitted companies (and there was no questionnaire received from companies outside of United States) there was no duplication of this item in questionnaires reported, result:

Questionnaire Total Premiums

American	$67,256,000
Foreign Admitted Companies	$30,537,000
Total	$97,793,000

Total Reinsurance by

American Companies to American Companies	$14,498,000
American Companies to Foreign Admitted Companies	$ 9,443,000
	$23,941,000
Foreign Admitted Companies to American Companies	$ 6,979,000
Foreign Admitted Companies to like Companies	$ 6,431,000
	$13,410,000
Total Reinsurance within U. S.	**$37,351,000**
As each company reported full amount of insurance written, the reinsurance is reported twice, so if this figure is deducted from gross figure compiled from all questionnaires, the result leaves gross insurance premium of	$60,442,000
Reinsurance with Foreign Non-admitted Companies	$ 8,696,000
NET PREMIUMS IN UNITED STATES	**$51,746,000**

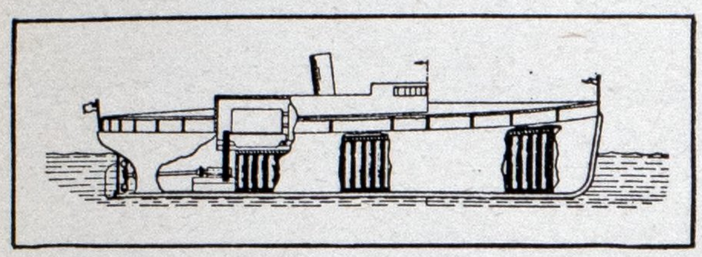
A review of surveys of marine insurance made in previous years indicates that the American marine insurance industry is growing at a steady pace. The previous figure reported as net premiums on ocean marine insurance in 1925, showed a total of $46,187,000, as against $51,746,000 reported for 1929, an increase of 12 per cent.

Patents Show Marine Development

Latest Marine Inventions Described

Specially Prepared for Marine Review
By Richards and Geier
Patent Attorneys, 274 Madison Avenue, New York

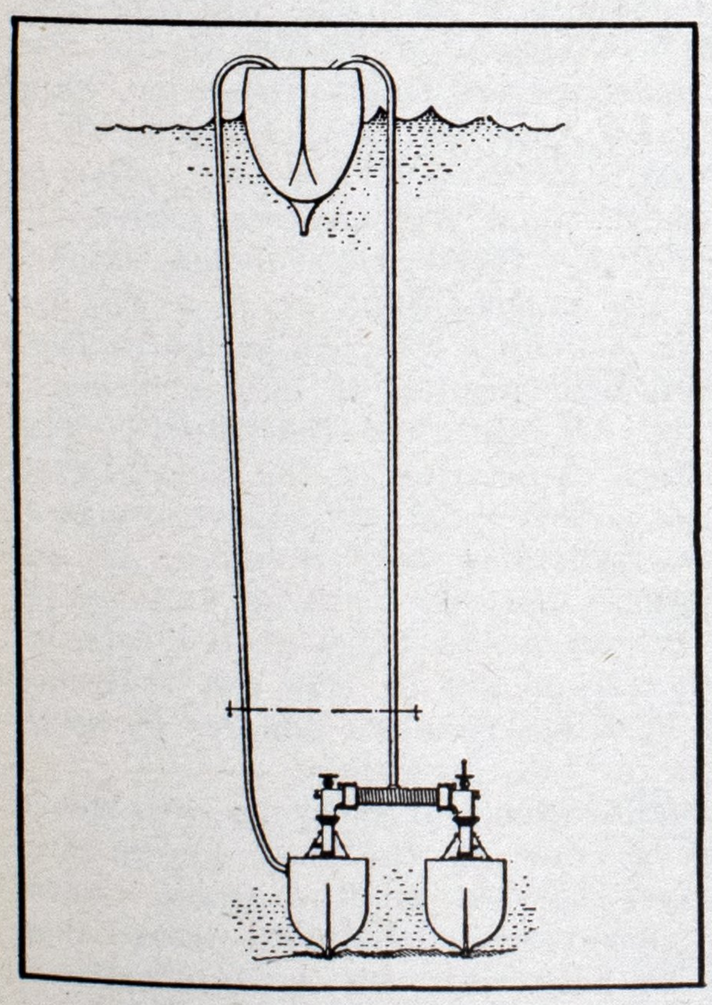
THE invention relates to floating structures such as ships and other bodies adapted for supporting loads or superstructures upon the water. It has for its object to render such floating structures practically unsinkable and thereby safeguard the lives of passengers, as well as any cargo.



FLOATING STRUCTURE

United States Patent No. 1,701,874, issued Feb. 12, 1929, to William T. Donnelly, of Brooklyn, New York.

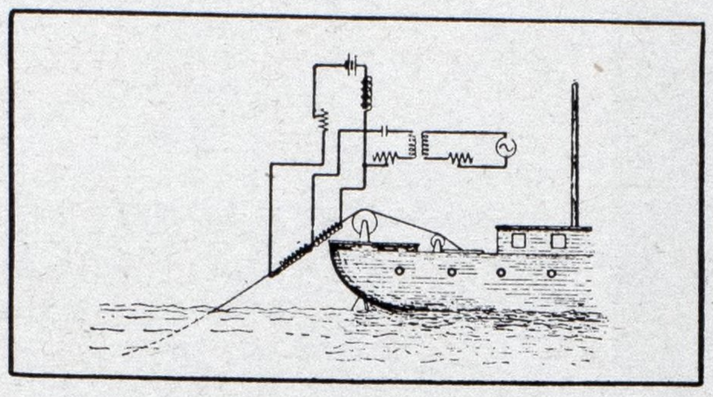
Objects of the invention are: To provide an improved and novel rescue apparatus for submarines including means for transferring crews from disabled vessels to submerged rescue vessels beneath the surface of the water: to provide in an apparatus of this character a novel escape means for permitting the evacuation of the crew from the interior of a sunken submarine; to provide a novel hull connection for enabling the exterior attachment of the rescue apparatus; and generally to provide a novel structural means for carrying out the above noted objects.



SUBMARINE RESCUE APPARATUS

United States Patent No. 1,740,532, issued Dec. 24, 1929, to John P. Ayer, of Portland, Maine.

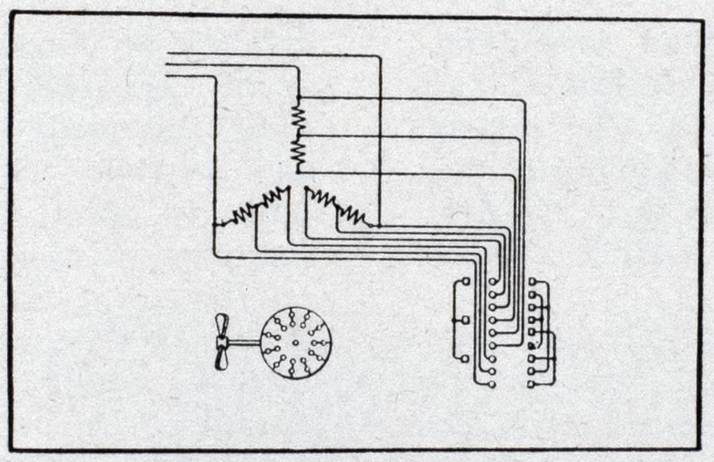
THE present invention relates to means for improving the electrical characteristics of loaded submarine conductors.



TREATING LOADED SUBMARINE CABLES

United States Patent No. 1,751,259, issued March 18, 1930, to Jesse F. Wentz, of New York, N. Y.

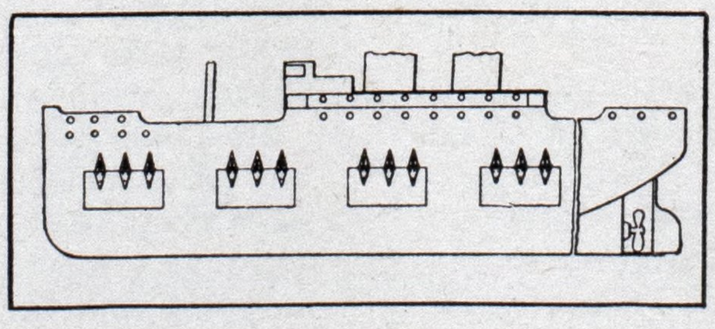
THIS invention relates to electric ship propulsion, and has for its object the provision of an improved propulsion system which is capable both of being controlled in a simple manner and of being efficiently operated at the different driving speeds.



ELECTRIC SHIP PROPULSION

United States patent No. 1,701,382, issued Feb. 5, 1929, to Campbell MacMillan, of Schenectady, New York.

IN CARRYING out this invention, there is contemplated the use of one or more hingedly mounted members constituting supports for propellers, which are arranged vertically when the hingedly mounted members are swung outwardly to a horizontal position, whereupon the propellers are operated to supply sufficient lifting power to overcome the weight of the vessel and to allow the same to be kept afloat and brought to safety in an ememrgency.

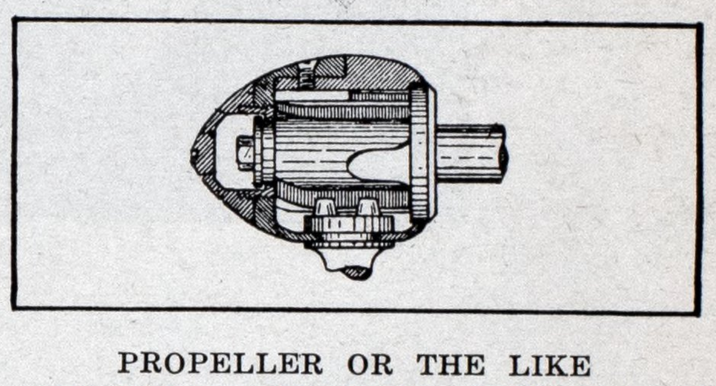


NONSINKABLE DEVICE FOR SUBMARINES

United States Patent No. 1,703,816, issued Feb. 26, 1929, to Lorenzo A. Fiore, of Baltimore, Md.

THIS invention relates to propeller wheels and more especially to that type of wheel in which the blades, when not revolving with the shaft, may feather or turn on their axes.

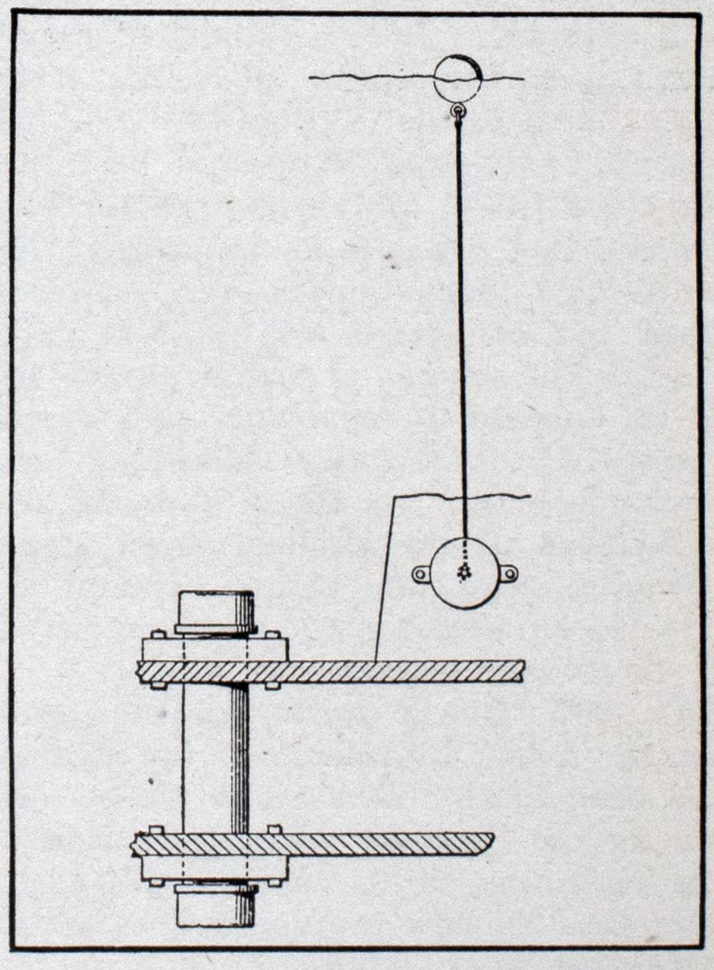
This type of wheel is quite largely used on sail craft equipped with auxiliary motor driven propulsion and is extremely valuable in case the sails are used as the propelling agent.



PROPELLER OR THE LIKE

United States Patent No. 1,703,834, issued Feb. 26, 1929, to Milton D. Thompson, of Fairhaven, Mass.

THE present invention relates to a submarine safety device and has for its prime object to provide a structure where it will be possible to set up communication between a sunken submarine and a rescue vessel.



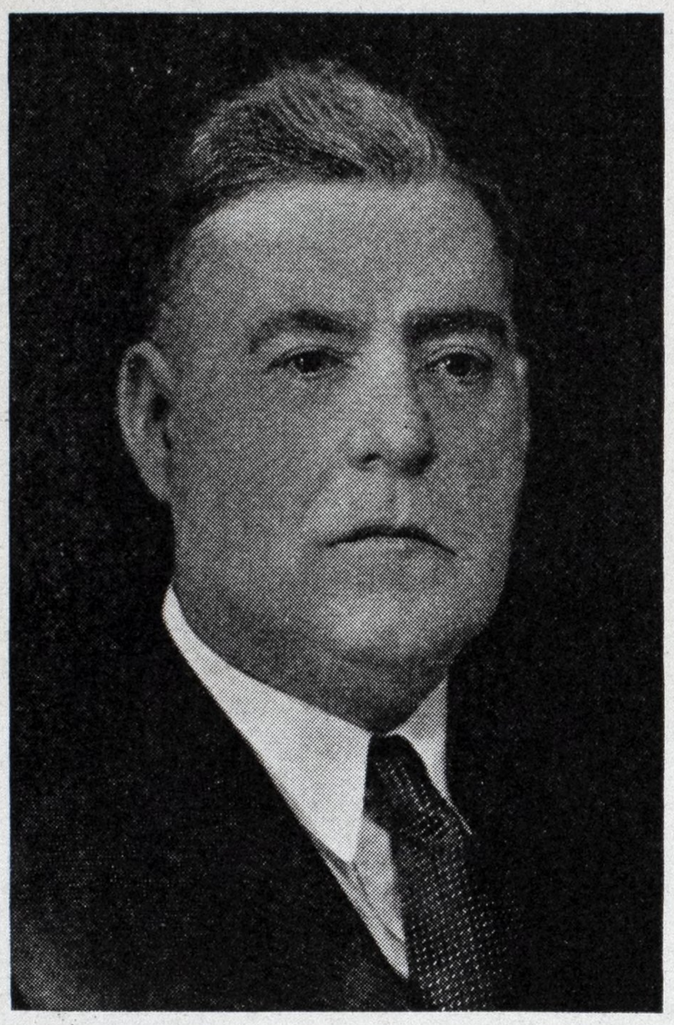
SUBMARINE SAFETY DEVICE

United States Patent No. 1,692,506, by Richard M. Johnson, Red Bank, N. J.

Personal Sketches of Marine Men

Capt. P. M. Cartwright, Grand President, International Shipmasters Association

By E. C. Powers



IN 45 years of service on the Great Lakes he has seen the passing of sail and wood in favor of steam and steel.

RESPECTED alike by his brother officers and vessel owners he has consistently maintained a high sense of duty to all.

UNDER his leadership the Association has been conducted for the benefit of its members through harmony with the owner.

CAPT. P. M. CARTWRIGHT, grand president, International Shipmasters association of the Great Lakes, has been sailing on the inland seas for the past 45 years. Beginning his career on the lakes with his father, his first experiences aboard ship were gained on sailing vessels when he was 14 years of age.

Born at Algonac, Mich., Sept. 12, 1871, Captain Cartwright spent most of his early days around Lake Michigan docks and vessels absorbing the atmosphere of ships and shipping. Having inherited a natural inclination toward a career afloat, since his father before him had spent most of his lifetime on Great Lakes sailing vessels, young Cartwright made his first voyage under canvas. As a deckhand and junior officer he became thoroughly trained in the duties of handling sailing ships in the days when aids to navigation were scarce and much depended upon the knowledge and skill of captain and crew.

With the advent of steam on the lakes and recognition of its superiority by owner and operator over the uncertainties of sail, Captain Cartwright began shipping aboard steam vessels. In these days he acquired an intimate knowledge of the application of steam as the propelling power of ships, and gained valuable experience which was later to fit him for the position of captain on a number of large lake vessels.

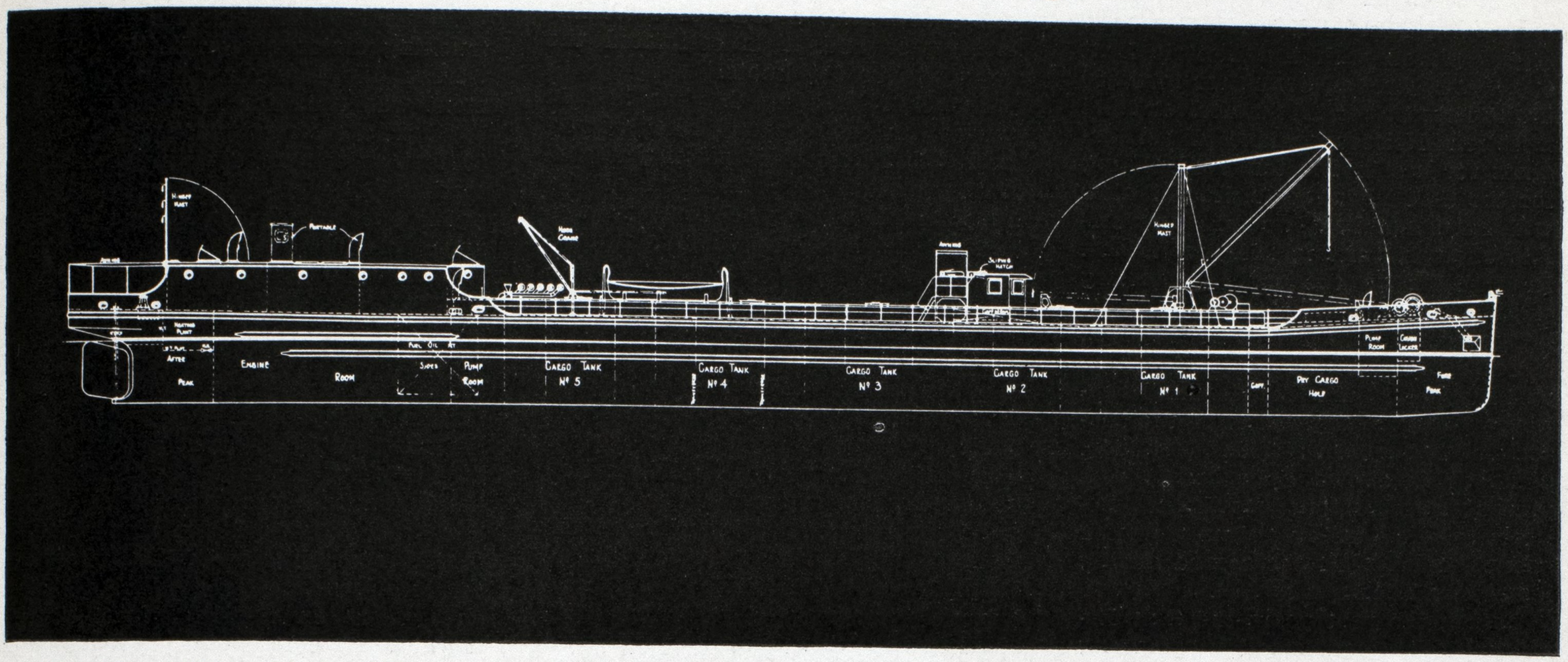
In 1902 Captain Cartwright started work with Pickands, Mather & Co., Cleveland on the steamer APPOTOMATOX and has been master of various vessels of the company's fleet during the 28 years since that time. Two years prior to the beginning of his service with Pickands, Mather & Co., the year 1900 saw the appearance of the first 500-foot bulk freighters on the lakes.

Operators at this time were beginning to realize that the earning power of their vessels was determined by celerity of dispatch and quick turn-arounds. Consequently in 1902, the first vessel constructed particularly to answer the rapid loading facilities of the ore docks went into service. Three years later a vessel was designed and built to meet the demands for both the rapid loading facilities of upper lake ports and the big Hulett unloaders on the lower lakes. At this time Captain Cartwright was seeing active service, first on the barge SANTIAGO and later as master of the freighters HEMLOCK, SHERWIN, and MATHER. In 1926 he was appointed master of the new 8151-gross ton freighter COLONEL JAMES PICKANDS, built at the Lorain yard of the American Ship Building Co.

For many years Captain Cartwright has been active in the affairs of the International Shipmasters association of the Great Lakes of which there are 14 lodges located in various cities. At the present time he is a member of Milwaukee Lodge No. 6, which was one of the earliest formed, a charter having been granted in 1891 in response to a petition signed by 37 interested individuals. The International Shipmasters association of the Great Lakes was founded in 1886 as a lake captains benevolent association. Captain Cartwright has been president of the Milwaukee lodge several times. In 1928 he was elected first grand president of the grand lodge of the International Shipmasters association and in 1929 was re-elected to the same office. In 1930 he was again honored by being elected grand president for the third time.

He holds the respect and esteem of everyone with whom he is associated and is one of the best known and liked captains in active service on the Great Lakes. Through almost a half century connected with Great Lakes shipping and through his activities with the International Shipmasters association he has built up a large circle of friends which include not only members of the association but many others in shipping circles as well.

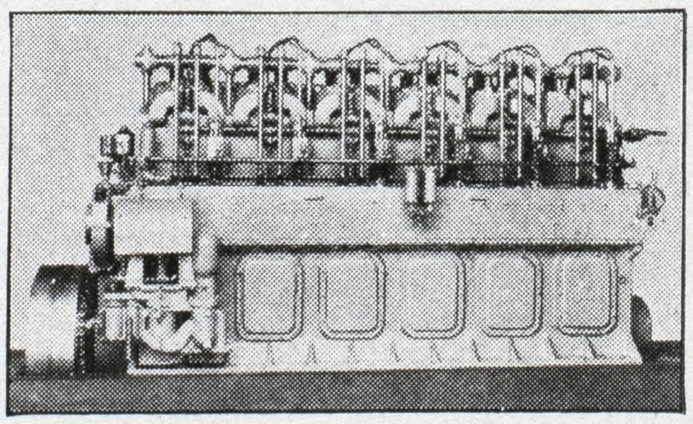
Nelseco powers two additions to the Gulf Refining Fleet



ONE OF THE TWO NEW OIL BARGES BEING BUILT FOR THE GULF REFINING CO., POWERED BY NELSECO-DIESEL ENGINES.

One of the most efficiently managed, nation-wide oil companies recognizes the economical and reliable service rendered by a Nelseco Diesel. Four 350-B. P. H., Type 6 MIR-18 engines have been selected to power two new oil barges of the Gulf Refining Company, which are now being built by the Bethlehem Shipbuilding Corporation, at their Sparrows Point plant near Baltimore, Maryland.

Both vessels, which are of the self-propelled twin-screw type, will have a length of 212 feet between perpendiculars, 37 foot beam, 13 ft. 9 in. depth and 11 ft. draft. They will maintain a speed of 9½ knots. The total carrying capacity will accommodate 10,500 barrels of refined products.



Type 6 MIR-18, 350-B. H. P., 280 R. P. M., 6 cylinder, 4 cycle; mechanical injection; direct reversible, Nelseco-Diesel engines.

Each is designed on the Isherwood bracketless system. They are being built to the design and under the direction of Mr. James Kennedy, General Manager of the Marine Department, the Gulf Refining Company.

Scheduled for delivery in 6 months, these boats will be operated on the New York State Barge Canal and in coastwise service. Their Nelseco equipment prepares them for hard and constant usage.

The 1930 Nelseco Diesel engines include a wide variety of models for all types of towboats, passenger, freight and fishing vessels. We shall be glad to send you complete information. Write for Catalog MR.

ELECTRIC BOAT COMPANY

NEW LONDON SHIP AND ENGINE WORKS, GROTON, CONN., U. S. A.

New York Sales Offices: 247 Park Avenue, New York City

NELSECO

Original licensees from and collaborators with M. A. N. since 1910

Chicago Representative
H. JACOBSEN
25 No. Dearborn St., Chicago, Ill.

Boston Representative
ELECTRIC BOAT CO. OF MASS.
126 State Street, Boston, Mass.

West Coast Representative
KING-KNIGHT CO.
Seattle, San Francisco, Los Angeles

Memphis Representative
J. S. BRONSON
1348 Madison Ave., Memphis, Tenn.

Twin Screw Diesel Tankers Barge Canal and Coast

A CONTRACT has recently been placed with the Electric Boat Co., Groton, Conn., for four 350 brake horsepower mechanical or solid injection Nelseco marine diesel engines for use in two tankers building for the Gulf Refining Co. Each tanker will have installed two direct reversible engines, turning 280 revolutions. In addition to the main propelling engines, there will be three 60 brake horsepower Atlas Imperial engines, direct connected to generators, which will furnish all the electrical and auxiliary power requirements of the vessel. The Bethlehem Shipbuilding Corp. plant at Sparrows Point, Md. is at present constructing the boats. Delivery of the first vessel is expected about January and the second during February, 1931.

During the past years the Gulf Refining Co. has been steadily extending operations along the New York State Barge canal and the Hudson river. Up to the present time transportation of their oil products has been made in vessels not entirely suitable for operation on the canal. Therefore, it was decided that with vessels specially built for the canal, their service could be greatly improved, as well as reducing operating costs.

The engineers of the marine department of Gulf Refining Co. investigated the conditions on the canal and as a result they designed the vessels which are under construction. It is interesting to note that these vessels are also suitable for operating in coastwise service during the four months of the year that the river and canal are closed to navigation.

These tankers have a length of 212 feet between perpendiculars, 37 feet beam, and depth is 13 feet 9 inches. The maximum loaded draft for coastwise service will be 11 feet, but when operating on the barge canal the loaded draft will not exceed 9 feet 6 inches. At the 11 foot draft the cargo carrying capacity will be approximately 10,500 barrels of oil products. Each vessel will have a total of 700 shaft horsepower and it is estimated the speed will be 9½ knots.

The Gulf Refining Co. has had in service in the ocean tanker, GULFPRIDE, three Nelseco diesel engine generating units. The selection of the same make of engine for the two tankers now building was made largely on account of the good service rendered by the GULFPRIDE engines. These engines are of the same type as those on the GULFPRIDE with the exception that they are direct reversible.

Several improvements have been made since the GULFPRIDE engines were built. Formerly the lubrication of the engine was accomplished by a gravity pressure system, whereas the modern engine has a complete forced or pressure system. Two plunger lubricating oil pumps are furnished instead of one. One pump drains the oil from the crankcase or engine base while the other takes the oil from the filter or storage tank and delivers it back into the lubricating oil system. The engine piston and cylinder walls no longer depend upon a mist or oil spray to lubricate these parts.

A timed forced feed lubricator is furnished with each engine and is mounted near the operating controls, so that the operator can at all times observe the action of the lubricator. The pistons are furnished with an additional Oil Wiper ring which is located at the lower part of the piston skirt. This extra wiper ring prevents any excess lubricating oil being drawn up from the crankcase, also the under side of the piston head is protected from burning the lubricating oil mist or fog found in the crankcase of a pressure feed engine. This is accomplished by means of an aluminum plate securely fastened to a flange cast integral with the piston.

Another feature of this engine is that a fuel oil heater is furnished. This heater is mounted on the end of the engine and just above the suction of the fuel pumps. Exhaust gases or the outlet of the circulating cooling water can be used for heating fuel oil of low viscosity. A profile view of the oil tanker is shown, below.

Mixed Marks Cargo

(*Continued from Page* 51)

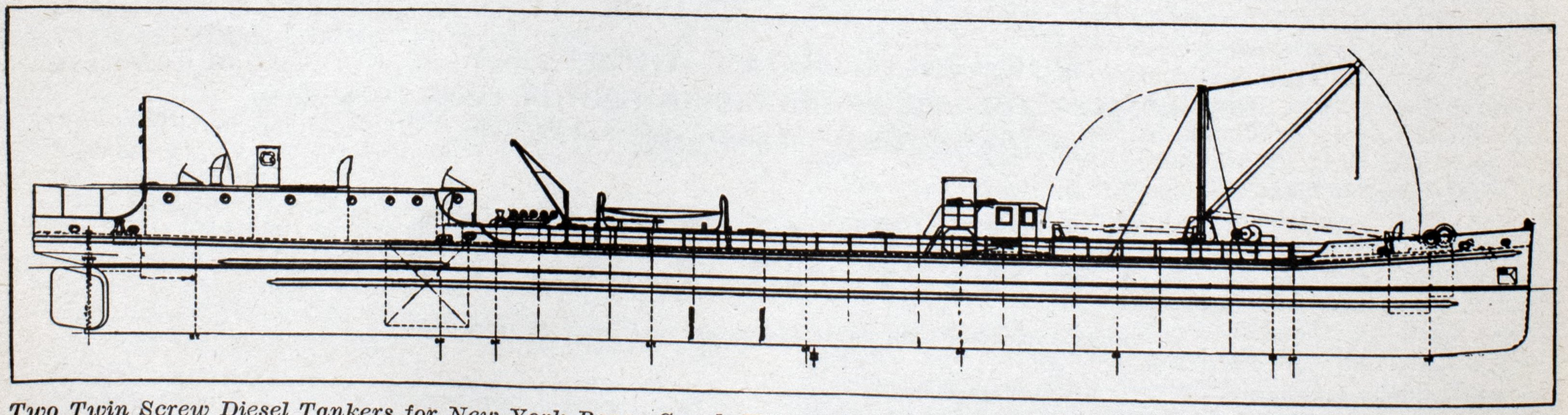
This large sum was saved because trucking distances for hand truckers were reduced and mechanical equipment was used for long hauls. The hand truckers now truck cargo 40 to 60 feet as compared with 100 to 400. Mechanical equipment has made it possible to haul heavier loads faster and with less labor. The average trailer load is four times the average hand truck load, for example, 4 cases of cigarettes as compared with 36 cases. Several of these heavier units are hauled by one man using a tractor, so that the load per man under the new system is some thirty times greater than the load per man when hand trucks were used.

Recently the practice was inaugurated of riding some carload shipments or less carload lots for one car on trailers on the boat from Baltimore to Pinner's Point. Twenty-two boxes of tinplate, for example, are placed on a trailer at Baltimore as received from a motor truck and it remains there until unloaded within a box car at Pinner's Point. Several handlings are saved, there is less damage to the tinplate and 22 boxes are handled at a time instead of one and are handled faster than when hand power was used.

Freight both carload and less than carload for and from the Norfolk freight station of the Southern railway is kept on trailers on the barges.

From the Pinner's Point operation, it would seem that mechanical equipment of standard design can be used regardless of the problem of mixed marks, and that even if "conditions are different" a proper analysis of the problem and the available methods of meeting it, will result in important savings.

Tractors and trailers are used in less than carload freight stations, marine terminals and warehouses, industrial plants and in most instances are of identical design. They are used economically in all these places because the problem is similar.



Two Twin Screw Diesel Tankers for New York Barge Canal, Hudson River and Coastwise—Powered with Nelseco Engines—Now under Construction at Sparrows Point, Md., for Gulf Refining Co.

Marine Disasters—A Brief Summary

A Compilation of Maritime Casualties Recording Collisions, Wrecks, Fires and Losses

Name	Date	Nature	Place	Damage Resulting
A. S. Upson	Aug. 30	Aground	Hog Lake	Floated
A. E. Cornelius	Aug. 29	Collision	St. Clair River	Port Side
Anthony Groves, Jr.	Aug. 24	Sprang Leak	Elk River	Not stated
Admiral Evans	Aug. 28	Struck dock	Seattle	Stern frames
Adonis	Aug. 6	Sank	Off Cape Ferrat	
Alkyon	Aug. 8	Aground	Sommars Island	Starboard side; keel
Araitz Mendi	Aug. 8	Fire	Cadiz	No. 3 hold
Axinire	Aug. 16	Collision	Rotterdam	Bows
Anna	Aug. 19	Not stated	Buenos Ayres	Starboard side
Andronede	Aug. 22	Fire	Dunkirk	Damaged
American Legion	Sept. 6	Ashore	Buenos Ayres	Floated—stem
Asiatic	Aug. 28	Struck bank	Kaiser Wilhelm Canal	Aground
Antonis Lemos	Aug. 28	Not stated	Buenos Ayres	Port & starboard side
Bantu	Sept. 4	Struck quay wall	Panama Canal	Starboard bow
Belgian Gulf	Aug. 7	Disabled	Colon	Machinery
Baltrader	Aug. 13	Aground	Pernau	Not stated
Bemtevi	Aug. 12	Disabled	Dakar	Boilers
British Peer	Aug. 15	Collision	Swansea	No. 7 tank
Birkenau	Aug. 23	Collision	Dublin	Starboard quarter
Bizkargi Mendi	Aug. 28	Aground	Corunna	Forepeak; No. 1 hold
C. R. Hubbard	Aug. 14	Struck dock	Port Huron	Forward
Claremont	Aug. 24	Ashore	St. Lawrence River	Not stated
City of St. Louis	Aug. 16	Struck obstruction	Lat. 37:17 lon 74:40	Propeller
Canadian Mariner	Aug. 28	Collision	Off Eastbourne	Leaking
Charterhythe	Aug. 29	Fire	Buenos Ayres	Sank
Charcas	Aug. 26	Fire	Talara	No. 2 hold
Cabo Tres Forcas	Aug. 20	Ashore	Carbonera Tower	Floated
Cereal	Aug. 23	Capsized	Whitstable	Sank
Cheshire	Aug. 21	Not stated	Rangoon	Below waterline
Colonial Beacon	Sept. 9	Collision	Newport	Plates; superstructur
Col De Lana	Sept. 11	Aground	Marcus Hook	Not stated
Centenary	Aug. 27	Ashore	Codroy Harbour	Total loss
Charterhaven	Aug. 26	Fire	Buenos Ayres	No. 1 hold
D. M. Clemson	Aug. 29	Collision	St. Clair River	Not stated
Doricstar	Aug. 14	Disabled	Falmouth	Turbine
Delio	Aug. 21	Fire	Morlaix	Considerable
Dora Weems	Aug. 23	Collision	Beaumont	Damaged
Delia	Aug. 20	Fire	Lat 49N, long 5W	Not stated
Dominion Coaster	Sept. 1	Aground	Halifax	Total loss
Durham Coast	Aug. 24	Fire	Manchester	Engine room
Dryden	Aug. 26	Collision	Galveston	Damaged
El Salvador	Aug. 23	Disabled	Panama Canal	Machinery
Eileen Wayman	Aug. 5	Collision	North Shields	Not stated
Ernest Emile	Aug. 8	Disabled	Yarmouth	Engine
Ea	Aug. 13	Collision	Lisbon	Damaged
East	Aug. 13	Slipped off berth	London	Sank—raised
Eastgate	Aug. 12	Ashore	Rosario	Floated
Eva	Aug. 16	Disabled	Christianssand	Machinery
Edith H. Cooney	Sept. 5	Sank	Off Sambro	
Essex Heath	Aug. 30	Disabled	Vigten Island	Engine
Fiume L.	Aug. 5	Fire	Trieste	No. 3 hold
Falsterbro	Aug. 9	Explosion	Williamstown	Accumulator room and engineers quarters
Foxhol	Aug. 26	Collision	River Scheldt	Damaged
Guadeloupe	Aug. 20	Disabled	Fort de France	Machinery
Golden Forest	Sept. 12	Ashore	Alaska	Total loss
Humboldt	Aug. 30	Collision	Santa Barbara	Bow
Honghoat	Aug. 3	Struck cliffs	Nr. Sibolga	Propeller; rudder; above waterline
H. M. S. Cornwall	Aug. 3	Collision	Woosung	Amidships
Hazel Branch	Aug. 13	Fire	Liverpool	No. 4 and 5 holds
Herman Bohnekamp	Aug. 19	Collision	Kiel Canal	Damaged
Hague Maru	Sept. 5	Struck Bank	Panama Canal	Leaking
Heimdall	Sept. 9	Struck sbmgd wreck	Off Ostana	Sank
H. F. Alexander	Aug. 23	Collided wharf	Los Angeles	Rudder; plates
Hauxley	Aug. 27	Collision	Off Tyne	Forepeak
Heinrich	Aug. 9	Ashore	Laeso	Considerable
Ile De France	Aug. 2	Struck Pier	Havre	Starbd. side
Iskra	Aug. 7	Struck Dock	Buenos Ayres	Bows
Ibera	Aug. 12	Collision	Off Uruguay	Damaged
Ita	Aug. 13	Collision	Liverpool	
Island King	Aug. 15	Disabled	St. Tnomas	Machinery
Jane L. Stanford	Aug. 30	Collision	Santa Barbara	Sank
Jamaica Producer	Aug. 3	Fire	London	Hold
James McGee	Aug. 14	Aground	Punta Indio	Not stated
Jrasness	Aug. 22	Sank	River Barrow	
Keystone	Aug. 18	disabled	Detroit	Engine
Kasama	Aug. 19	Fire	Gibraltar	No. 2 hold
Kostantis Lemos	Aug. 15	Aground	Kiel	Not stated
King Cadwallon	Aug. 14	Fire	Off Durban	Hold; engine room; steering gear
Kuru	Sept. 8	Sank	Helsingfors	
Latawin	Aug. 17	Explosion	Sheepshead Bay	Considerable
Leam	Aug. 5	Collision	North Shields	Not stated
Lieutenant Schmidt	Aug. 8	Fire	Terneuzen	No. 2 hold
Lingestroom	Aug. 8	Struck bridge	London	Plates; bow
Lok Sun	July 14	Ashore	Off Hong Kong	Total loss
Lilly	Aug. 14	Aground	Upper Mersey	Floated
Lehigh	Sept. 9	Struck dock	Superior	Plate
Lewis K. Thurlow	Sept. 8	Collision	Boston	Bows
Liri	Aug. 26	Collision	Galveston	Propellers; stern frame—floated
Munorway	Aug. 13	Ashore	Boston	Floated
Morso	Aug. 25	Fire	Hudson Bay	Sank
Mina Brea	Aug. 7	Fire	Off Canso	Abandoned
Marouka Pateras	Aug. 16	Collided dock wall	Barry	Damaged
Mamilius	Aug. 21	Fire	Brisbane	No. 6 hold
Memas	Aug. 21	Collision	Monte Video	Damaged
Merkaton	Aug. 21	Disabled	Cuxhaven	Machinery
Maricopa	Sept. 10	Touched bottom	Lake Superior	Not stated
Maid of Patras	Aug. 27	Stranded	Vardar	Not stated
Mokta	Aug. 27	Collision	Off Tyne	Stem
Margalau	Aug. 29	Struck dock	Buenos Ayres	Plates; frames
Nord Friesland	Sept. 1	Explosion	Havana	Not stated
Nikko Maru	Aug. 7	Ashore	Saghalien	Floated
Narragansett	Aug. 13	Collision	Liverpool	Stem; plates
Niobe	Aug. 12	Collision	Flamboro Head	Port side
Nyssiena	Aug. 16	Collision	Rotterdam	Sank
Nathalia	Aug. 21	Ashore	Rhyl	Considerable
Nubian	Aug. 22	Ashore	Anticosti Island	Not stated
Nova I	Sept. 7	Fire	Halifax	To water's edge
Osceola	Aug. 19	Disabled	Bayonne	Engine
Oriona	Aug. 25	Disabled	Charleston	Engine
Ole Aarvold	Sept. 1	Ashore	Cape Pine Cove	Not stated
Ospray	Sept. 7	Ashore	New London	Floated
Paris	Aug. 20	Fire	Havre	Considerable
President Harrison	Aug. 22	Disabled	New York	Machinery
Paulsboro	Aug. 29	Fire	Off Key West	Engine room
Piako	Aug. 5	Struck pierhead	Glasgow	Stem; plating
Pacific Trader	Aug. 9	Fire	Glasgow	No. 2 hold
Prairie Flower	Aug. 14	Fire	Nr. Eddystone	Sank
Prince George	Sept. 8	Collision	Boston	Stanchions
Pacific Spruce	Sept. 9	Ashore	Morant Cay	Not stated
Pebble	Aug. 27	Collision	Weymouth	Rail; plate
Persio	Aug. 30	Stranded	Canakkale, Dardanelles	Not stated
Quimistan	Aug. 21	Fire	At sea	Abandoned
Queenie	Aug. 7	Ashore	Hammersmith	Not stated
Koi Leopold	Aug. 8	Collision	Flushing	Not stated
Rheingold	Aug. 19	Collision	Kiel Canal	Damaged
Roar	Aug. 20	Ashore	Vasa	Forepeak
Rietfontein	Aug. 26	Ashore	Nr. Antwerp	Floated
Rhymney	Aug. 30	Fire	Durban	After hold
S. M. Clement	Aug. 22	Collision	Sandusky	Starbd. bow
S. B. Way	Aug. 22	Collision	Sandusky	Not stated
Sylvania	Sept. 5	Struck pier	Chicago	Forward
San Juan	Aug. 30	Collision	Off Pigeon Point	Sank
S. C. T. Dodd	Aug. 30	Collision	Off Pigeon Point	Bows
San Leonardo	Aug. 31	Aground	Buenos Ayres	Floated
Scheer	Aug. 3	Collision	Woosung	Bow
Sumatra	July 31	Touched ground	Dakar	Rudder
Sekunda	Aug. 16	Fire	Fredrikshavn	Cabin plates
Sawokla	Aug. 19	Disabled	Brisbane	Engine
St. Cuthbert	Aug. 16	Collision	Halifax	Not stated
San Quiteria	Sept. 7	Abandoned	Lat 44:23N Lon 50:09W	
Suffolk	Sept. 9	Collision	New York	Bows
Southern Cross	Sept. 9	Sank	Staten Island	
St. Cuthbert	Sept. 5	Collision	Halifax	Bow
Silvania	Aug. 26	Collision	Lat 50:40N, lonL: 00E	Stem; plates
T. H. Wickwire, Jr.	Aug. 27	Collision	Toledo	Plates
Tyne	Aug. 14	Sank	Pimlico	
Theodora	Aug. 15	Sank	South Jersey	
Tobasco	Aug. 19	Disabled	North Hinder	Not stated
Tresness	Aug. 21	Struck Rock	River Barrow	Sank
Thistlebrae	Aug. 26	Aground	Buenos Ayres	Floated
Toussika	Aug. 27	Collided pontoon	Flushing	Forepeak
Ugo Bassi	Aug. 5	Fire	Almeria	No. 4 hold
Viernoe	Aug. 16	Collision	Halifax	Plates; stanchions; etc.
Vimeira	Sept. 9	Fire	Rotterdam	Not stated
Wai Shing	Aug. 3	Collision	Chinpiang	Rudder
Westward Ho	Aug. 11	Struck pier	London	Not stated
Wascana	Aug. 13	Disabled	Civita Vecchia	Propeller shaft
Worrell Clarkson	Sept. 9	Struck dock	Detour	Not stated
Yomo Maru	Aug. 6	Stranded	Tokio	Total loss
Yewhill	Aug. 29	Aground	Blyth	Floated—propeller
Zuiyo Maru	Aug. 19	Ashore	Nr. Okujiri Island	Not stated
Zeeland	Aug. 4	Ashore	Nr. Hansweerd	Not stated

Note: For August and Part of September, 1929

Marine Disasters—A Brief Summary

A Compilation of Maritime Casualties Recording Collisions, Wrecks, Fires and Losses

Name	Date	Nature	Place	Damage Resulting
A. E. R. Schneider	Sept. 18	struck obs.	Erie	Wheel; rudder. engine
Annie Johnson	Sept. 21	Aground	Barranquilla	Floated
Allan	Sept. 2	Collision	Kaiser Wilhelm Canal	Damaged
Acielle	Sept.	Ashore	Off Smoky Cape	Not stated
Asko	Sept. 11	Aground	Hull	Floated-Damaged
Aelybryn	Sept. 11	Disabled	Cape Guardafui	Engine
Athelcrest	Oct. 6	Disabled	Santiago	Propeller
Ausonia	Oct. 6	Aground	Rhoads	Floated
Ada Tower	Oct. 10	Ashore	Atlantic Beach	Damaged
Adams	Oct. 6	Aground	Letete River	Not stated
Adamantios J. Pithis	Sept. 23	Aground	London	Floated
Autorenault	Sept. 26	Collision	River Seine	Sank
Anahuac	Sept. 25	Collision	Puerto	Bow
Belpareil	Sept. 17	Collision	Lat. 40:29	Port side
Berwindvale	Sept. 21	Disabled	New York	Machinery
Berwindlea	Sept. 24	Disabled	Glasgow	Rudder
Brandywine	Sept. 30	Disabled	Key West	Boiler
Benholm	Sept. 5	Collision	Liverpool	Bows
Botilla Russ	Sept. 18	Collision	Nr. Altona	Not stated
Bretagne	Oct. 4	Abandoned	Off San Francisco	
Baumwall	Sept. 27	Fire	Harburg	No. 2 hold
Culburra	Sept. 9	Ashore	White Cliff Island	Floated
City of Alton	Sept. 16	Collision	Rotterdam	Above waterline
Carl Gerhart	Sept. 13	Ashore	Mabou	Broken in two
Cabo Tortosa	Sept. 24	Disabled	New York	Motor
Corsican Prince	Sept. 30	Collision	Boston	Superstruc.
Cariddi	Sept. 2	Aground	Buenos Ayres	Floated
Charterhaven	Sept. 9	Struck dock	Buenos Ayres	Plates
Continental Freighter	Sept. 7	Struck quay	Southampton	Propeller
Chicago City	Sept. 10	Ashore	Theohe Island	Floated
Claudia	Sept. 8	Collision	Island Gotland	Not stated
Capitaine Illiaquer	Sept. 19	Aground	River Scheldt	Floated
Chomedy	Oct. 10	Ashore	Tobago	Not stated
Captain Kirby	Oct. 9	Sank	New York	
Caliche	Sept. 23	Disabled	Panama	Tailshaft
City of Simla	Sept. 13	Collision	Glasgow	Forecastle; stem
D. Z. Norton	Sept.	Struck bot.	South Chicago	Bottom
Domira	Sept. 25	Ashore	No. of Abaco	Damaged
Depute Abel Ferry	Sept. 2	Struck quay	Leith	Stem; bow plates
E. L. Ford	Sept. 23	Struck bank	Duluth	Shoe; rud.
Estella	Sept. 11	Sank	Nr. Navieze Channel	
Edward Buckley	Sept. 13	Fire	Little Current	Total loss
Emile Baudot	Sept. 20	Disabled	Lat. 38:10N., 9:08 E	Not stated
Erpel	Sept. 20	Aground	Trangsund	Floated—leaking
Emperor	Sept. 19	Collision	River Avon	Port bow
Eelbeck	Oct. 7	Explosion	Philadelphia	Not stated
Elmshorn	Oct. 10	Disabled	Kirkwall	Machinery
Freikoll	Sept. 14	Ashore	Little Bay Islands	Floated
Farnorth	Sept. 24	Aground	Nr. St. Pierre	Floated
Fagervik	Sept. 8	Collision	Island of Gotland	Damaged
Fifetown	Sept. 12	Stranded	East of Hirtshalls	Float d—considerable
Francesco P.	Sept. 11	Aground	Sete	Abandoned
Fiumana	Sept. 25	Ashore	Seine river	Floated
Gateway City	Sept. 13	Aground	Chesapeake Bay	Floated
Gunny	Sept. 16	Collision	Not stated	Stem
Grantleyhall	Sept. 25	Collision	River Tees	Damaged
Glitne	Sept. 21	Abandoned	56:48N; 6:46 E.	
Gronant Rose	Sept. 27	Sank	So. Ushant	
Hosanger	Sept. 13	Aground	Fogo Harbor	Floated-No. 3 hold
Hermion	Sept. 14	Collision	San Francisco	Starboard side
Heidelberg	Aug. 30	Disabled	Cuxhaven Roads	Rudder
Highland Pride	Sept. 9	Struck Rock	Off Vigo	Sank
Heroic	Sept. 17	Collision	Crosby Channel	Hawsepipe
Hakon VII	Oct. 6	Struck rock	Nr. Floroe	Sank
Irene S. Wilkinson	Sept. 12	Aground	Nr. Sagua	Floated
Imlay	Sept. 29	Disabled	Charleston	Engine
J. J. Boland	Sept. 30	Disabled	Soo River	Machinery
Josephine Decosta	Sept. 16	Ashore	Off Seal Island	Sank
Jos. F. Hooper	Sept. 27	Disabled	Off the Highlands	Lost rud.; rudder stock
Johannes	Sept. 5	Collision	Kaiser Wilhelm Canal	Sank
James McGee	Oct. 2	Aground	Buenos Aires	Floated
John Brown YM 109	Sept. 16	Disabled	n.w. Ymuiden	Boilers
Java Arrow	Oct. 7	Collision	Not stated	Plates
Jupiter	Sept. 26	Struck sub. object	Blyth	Propeller
Japix	Sept. 26	Aground	Rouen	Not stated
Kyle	Sept. 16	Struck rock	Nr. Hopedale	Forepeak
King Cadwallon	Sept. 12	Ashore	East London	Total wreck
Knockfierna	Sept. 19	Fire	S.W. of Albany	No. 1 hold
Kapara	Sept. 11	Aground	Port Victoria	Floated—shell plating
King Egbert	Sept. 24	Fire	London	No. 2 hold
Knockfierna	Sept. 23	Fire	Albany, W. A.	Nos. 1, 2, 3 and 5 holds
King Robert	Sept. 24	Disabled	Adelaide	Stem
Lillian E. Kerr	Sept. 9	Aground	Nr. [illegible]	Floated

Name	Date	Nature	Place	Damage Resulting
Lake Frances	Sept. 19	Struck sub. object	Seattle	Tail shaft; lost whee
Lauterfels	Sept. 3	Fire	River Elbe	Not stated
Lalande	Oct. 7	Collision	Not stated	Below water line
Lom	Sept. 24	Collision	Kaiser Wilhelm Canal	Damaged
Margaret Dollar	Sept. 18	Fife	Shanghai	Deck fittings timber
Munaires	Sept. 20	Heavy. weather	Nr. Panama	Superstructures
Macedonia	Sept. 5	Collision	London	Starboard side
Ministro Frers	Sept. 5	Disabled	Mar del Plata	Propeller
Medjerda	Sept. 9	Aground	Chaubeau	Not stated
Mantilla	Oct. 4	Aground	North Point	Floated
Norbiton	Sept. 27	Aground	W. of Cape Chatte	Not stated
Nordnes	Sept. 5	Ashore	Nr. Floro	Floated
Orleans	Sept. 12	Ashore	Nr. Mispec	Floated—badly
Oil Transfer No. 17	Sept. 16	Aground	Nr. Chesapeake City	Not stated
Olivebank	Sept. 9	Collision	Kil. 27	Forepeak
Oostcappelle	Sept. 12	Struck dock wall	Bombay	Stem; bow plates
Paraguay	Sept. 16	Collision	Rotterdam	Above water l ne
Plymouth	Sept. 16	Fire	Portland	Considerable
Pecos	Sept. 21	Disabled	Charleston	Engine
Providence Socony	Sept. 24	Struck rock	Kennebec River	Damaged
Princess Montague	Sept. 27	Ashore	Nassau	Aft
Potomac	Sept. 20	Ashore	Andros Island	Broken in two
Portugal	Sept. 4	Ashore	Sea of Marmara	Tail shaft; machinery
Princess Victoria	Sept. 5	Ashore	Tory	Floated—plates
Perch Rock	Sept. 17	Collision	River Mersey	Plate, rivets
Pitea	Sept. 18	Collision	Off Falsterbro Rev	Above water line
Pan America	Oct. 4	Struck sbmgd. object	Montevideo	Leaking
Purnell T. White	Oct. 3	Stranded	W. of Cape Lookout, NC	Not stated
Pure Woco Pep	Oct. 10	Ashore	Savannah	Not stated
President Roosevelt	Sept. 20	Struck quay	Bremerhaven	Propeller
Rhymney	Sept. 2	Fire	Durban	No. 1, 2 and 4 holds
Roar	Sept. 5	Aground	Gulf of Bothnia	Floated—forward
Rassay	Sept. 9	Collision	Kil. 27	Port side
Ravonia	Sept. 13	Collision	Liverpool	Port side
Remy Chuinard	Oct. 4	Aground	Nr. Sandwich Pt.	Floated—bottom
Robin Hood	Oct. 10	Aground	Panama Canal	Floated—stem
Sandmaster	Sept. 26	Collision	Detroit	Not stated
Solarine	Sept. 12	Disabled	Sandwich	Machinery
Southern Prince	Sept. 18	Explosion	Buenos Aires	Not stated
Siltonhall	Sept. 21	Fire	South. Indian Ocean	Not stated
Scandia	Sept. 30	Aground	So. of Miami	Total wreck
Sacandaga	Sept. 30	Collision	Boston	Superstructures
Stella Maris	Sept. 2	Disabled	Curacao	Machinery
Skodsborg	Sept. 5	Collision	London	Not stated
Sainte Marguerite II	Sept. 5	Struck quay	Sete	Plates
Solviken	Sept. 11	Collision	Hong Kong	Damaged
Sint Jansland	Sept. 11	Collision	Terneuzen	Port side
Saint Leger	Sept. 17	Disabled	Off Antifer	Not stated
Streefkerk	Sept. 20	Collision	Antwerp	Port side
San Gaspar	Sept. 26	Aground	Montevideo	Floated
San Eduardo	Sept. 25	Collision	Puerto	Forepeak
Tamarco	Sept. 21	Ashore	Nr. Flagler Beach	Not stated
Tampa	Sept. 24	Disabled	Gibraltar	Machinery
Truxton	Oct. 1	Disabled	Tampa	Lost prop.
Tiverton	Sept. 5	Collision	Liverpool	Engine roon
Tairai Maru	Sept. 7	Ashore	Nr. Chesshimisaki	Not stated
Trafford Hall	Sept. 12	Fire	Cape Town	No. 1 hold
Tern	Sept. 19	Collision	London	Steering gr.
Tremeadow	Sept. 25	Fire	Adelaide	Not stated
Urbino	Sept. 23	Aground	Philadelphia	Floated
Urayasu Maru	Sept. 15	Aground	Nr. Mokpo Morea	Not stated
Uskport	Sept. 27	Aground	Pauillac	Not stated
Valcartier	Sept. 13	Struck bank	Fairport	Rudder
Virginia	Sept. 14	Collision	San Francisco	Not stated
Vega	Sept. 16	Disabled	So. of Cape Hatteras	Lost prop.
Viking Star	Sept. 29	Aground	Columbia River	Floated
Vesuvius	Sept. 9	Explosion	Rotterdam	Not stated
Veendam	Sept. 24	Aground	Rotterdam	Floated
Wisconsin Bridge	Sept. 30	Struck rocks	Abaco Island	Sank
Winkleigh	Sept. 17	Collision	Crosby Channel	Port side aft
Wynburn	Oct. 6	Aground	Campbellton	Not stated
W. I. Connelly	Oct. 8	Aground	Nuevitas	Leaking
Westerdale	Sept. 24	Abandoned	56:32 N. 7:03 E.	
Wyndyke	Sept. 25	Collided quay	Leith	Stem
Yesaki Maru	Sept. 21	Ashore	Saghalien	Not stated
Zmaj	Sept. 10	Fire	Flushing	Not stated
Zena 4	Sept. 13	Disabled	Lat. 50:50N. Long. 1:3[illegible] E.	Engine

Note: For September and Part of October, 1929

New Trade Publications

VALVES—Benefits of metallurgical control in the production of better valves is made the subject of a bulletin by the Edward Valve & Mfg. Co., East Chicago, Ind. These are especially noticeable in valves used for high pressure and high temperature.

CENTRIFUGAL PUMPS—Pennsylvania Pump & Compressor Co., Easton, Pa., is distributing a bulletin on its double suction, single stage centrifugal pumps, with ample illustrations and full description of construction and operation.

ROTARY SHEARS — Quickwork Co., St. Marys, O., is distributing its catalog of rotary shears, which it has made complete as possible to cover the shearing of materials by use of its various devices. Specifications and illustrations are used liberally to supplement the text.

PUMPS—Chicago Pump Co., Chicago, has prepared a bulletin on its pneumatic water systems. It covers advantages of this system, explanation of special equipment, assembly and layout suggestions and engineering tables and specifications for architects and engineers.

ENGINE INDICATORS—A booklet covering recent developments in Maihak engine indicators has just been published by the Bacharach Industrial Instrument Co., Pittsburgh. The folder describes the distinct features of this indicator valve and its application to diesel engines.

BELT CONVEYORS — Link-Belt Co., Chicago, has prepared a flexible-covered book containing data on belt conveyors, to facilitate selection and application of proper types for handling any material in the quantities desired. It covers all data needed in deciding on proper equipment of this nature.

UNIT PULVERIZER — Whiting Corp., Harvey, Ill., has issued for its subsidiary, the Grindle Fuel Equipment Co., a bulletin on its unit pulverizer for preparing coal for use in firing industrial furnaces and small boilers. Illustrations show characteristic installations and details of construction.

WELD-BUILT MOTOR — Bulletin 262, Electro Dynamic Co., Bayonne, N. J., is devoted to a description of the company's new weld-built motor, various parts of the motor being illustrated. The last page of the bulletin gives an interesting account of the progress made by the company during the 50 years of its existence.

SILENCERS — The marine sales division, Maxim Silencer Co., Hartford, Conn., has issued two folders covering the advantages of Maxim silencers on pleasure boats and commercial boats and a third folder devoted to technical data. Interesting information is given regarding the elimination of noise.

PORTABLE BOILERS — Scotch marine boilers and steam engines built by James Leffel & Co., Springfield, O., are shown in a bulletin now being distributed. Principles of construction and operation are described. Various types are illustrated and diagrams indicate means to attain efficient operation. Dimension tables are included.

DURONZE—Bridgeport Brass Co., Bridgeport, Conn., in its new catalog on Duronze, a silicon bronze, outlines in detail facts concerning the strength, ductility and endurance of its product. Duronze is available in sheet, strip, rod and wire and is immune to season cracking. The catalog is illustrated and contains tables of physical properties and tests.

DISTILLATION PROCESS—Henry I. Lea, gas engineer, Mesa and Latimer roads, Santa Monica, Cal., has issued a catalog on the Lea distillation process and its ability to produce pure water from the sea at low cost. Line drawings illustrate the still used in the process and data are given concerning distillation fundamentals and the construction and operation of the still.

RESISTANCE THERMOMETERS —A revised catalog of its resistance thermometers is being sent out by Leeds & Northrup Co., Philadelphia. It covers resistance thermometers for recording, controlling and indicating temperatures. The catalog goes into applications for heating and ventilating, use in refrigerating and chemical plants, gas making and other comparatively low temperature uses.

ACID PROOFING—American Hard Rubber Co., New York, has issued a catalog describing uses for its hard rubber lining process for protecting metal containers from the action of acids and other corrosives in the chemical process industries. Tanks, pipes, pumps and other equipment lined with hard rubber for protection are among the uses illustrated. Illustrations, data tables and charts supplement the text.

SHORE PROTECTION—A catalog dealing with concrete shore protection has been issued by the Portland Cement association, Chicago. The booklet is profusely illustrated, showing various concrete structures erected for shore protection. Chapters are devoted to the principles of making concrete, water-cement ratios for structures to meet different degrees of exposure, foundations, bulkheading and similar construction features.

REVOLUTION INDICATOR — The Sperry Gyroscope Co., Inc., Manhattan Bridge Plaza, Brooklyn, N. Y., has issued a booklet on its revolution indicator system, known as the high voltage voltmeter type. A complete description of the system is given together with information covering types available, various uses of the system, signal lights, installation and guarantee. Illustrations include halftones as well as drawings. The booklet will be sent to anyone upon request.

Business News for the Marine Trade

The Chippewa Steamboat Corp., Newark, N. J., has been incorporated with 2500 shares of common stock by James B. Reilly.

The Fairfield shipbuilding plant, Baltimore, was recently damaged by fire, the loss being estimated at $200,000.

The Boucher Playthings Mfg. Corp., New York, has been incorporated with $100,000 and 4,000 common shares by Taylor, Blanc, Capron, & Marsh, 43 Exchange place, to deal in water craft.

The Merrill Stevens Dry Dock Co., 1270 Northwest Eleventh street, Miami, Fla., has begun work on the erection of a machine shop. The new building will be two stories, 30 x 150 feet, and will cost $40,000.

Haynes Stellite Co., Kokomo, Ind., a unit of Union Carbide & Carbon Corp., has announced the completion of a new foundry at the Kokomo works, built expressly for the manufacture of Hastelloys, a group of new acid resistant alloys.

The Maryland Dry Dock Co., Fairfield, Md., plans to erect a new dry dock within the next year and will start in the near future on other improvements, including the construction of a new pier and the extension of three others.

The city council of Huntington Beach, Cal., recently awarded contract to the Merritt-Chapman & Scott Corp., 720 Wilmington Ave., San Pedro, for the construction of a 500-foot reinforced concrete pier extension, 25 feet wide, at a cost of $110,991.

Effective Aug. 1, the Reynolite division of the Reynolds Spring Co., Jackson, Mich., became the wholly owned subsidiary of Cutler-Hammer Inc., Milwaukee. This adds to the line of Cutler-Hammer products the well known Reynolite products, including bakelite flush plates and plural plugs.

Thornycroft Canada Ltd. and Simms Motor Units Ltd., Canadian branches of British firms, will establish plants in a new building now being erected at 484 Dundas street west, Toronto. John I. Thornycroft & Co. of London, England, parent company of Thornycroft Canada Ltd, manufactures motor trucks and marine motors, and Simms Motor Units Ltd. of London, England, manufactures magnetos and other automotive equipment.

United Dry Docks Inc., 11 Broadway, New York, has expanded facilities at its Mariners Harbor, Staten Island, plant by the addition of a 12,000-ton dry dock. The dock was moved to its new location from the Alderton plant in Brooklyn and a sixth section added to increase its lifting capacity from 10,000 to 12.000 tons. It is 549 feet long and is able to handle the larger tankers discharging cargoes along the New Jersey and Staten Island waterfronts.

Barrett-Cravens Co., manufacturers of Barrett lift trucks, steeleg platforms and portable elevators, will move into their new plant at 101 West 87th street, Chicago, on Sept. 1. This places Barrett-Cravens Co. under the same roof with its two affiliated companies, the Walker Vehicle Co., manufacturers of electric street trucks, and the Automatic Transportation Co., manufacturers of electric lift trucks and tractors.

The Interocean Steamship Corp. has announced opening of offices at 311 California street, San Francisco, to carry on a general steamship agency business with Erik Krag as general manager for the Pacific coast. Watson S. Barr will act as northwestern manager.

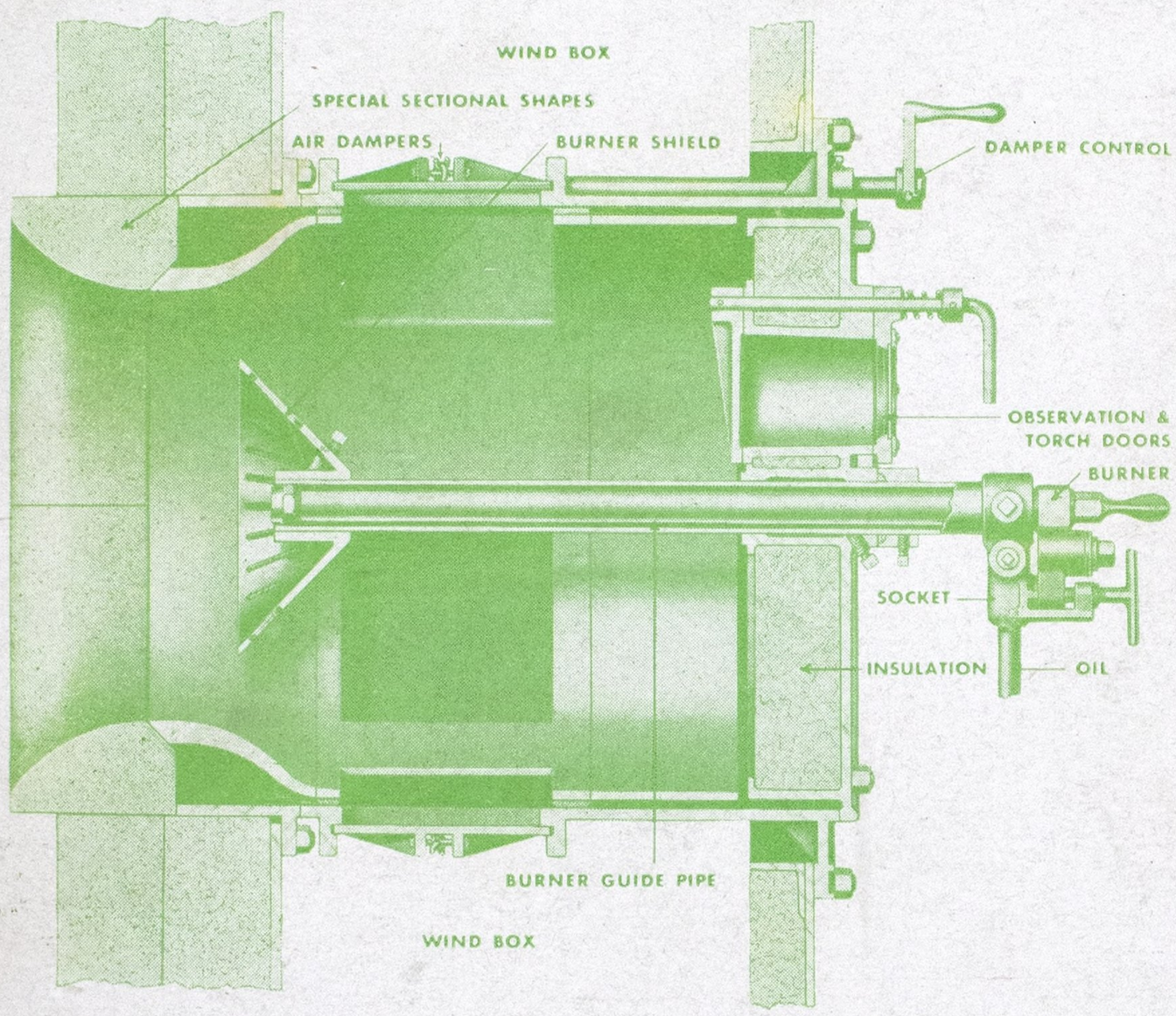
Marine Review

Reg U.S. Pat. Off.

The National Publication Covering the Business of Transportation by Water

October, 1930

IMPROVED COEN REGISTERS



Increased safety, accessibility and ease of installation mark the new Coen Register as outstanding for the Marine field. Installed for forced draft high pressure boilers, the register design provides for complete frontal insulation as well as greater capacity with less air pressure. In conjunction with the burner, the register is designed to give a rotary motion to the air used for combustion without the use of air-directing vanes.

Sixty-two percent of the oil-burning vessels recently placed on the honor roll by the United States Shipping Board were equipped with Coen Burners. Sixty-four and three-quarters percent given honorable mention were likewise equipped.

Write us for Bulletins No. 16 and 20, which give full particulars on both burner and register.

COEN COMPANY, *Inc.*,

Executive Office
428 Story Bldg., Los Angeles

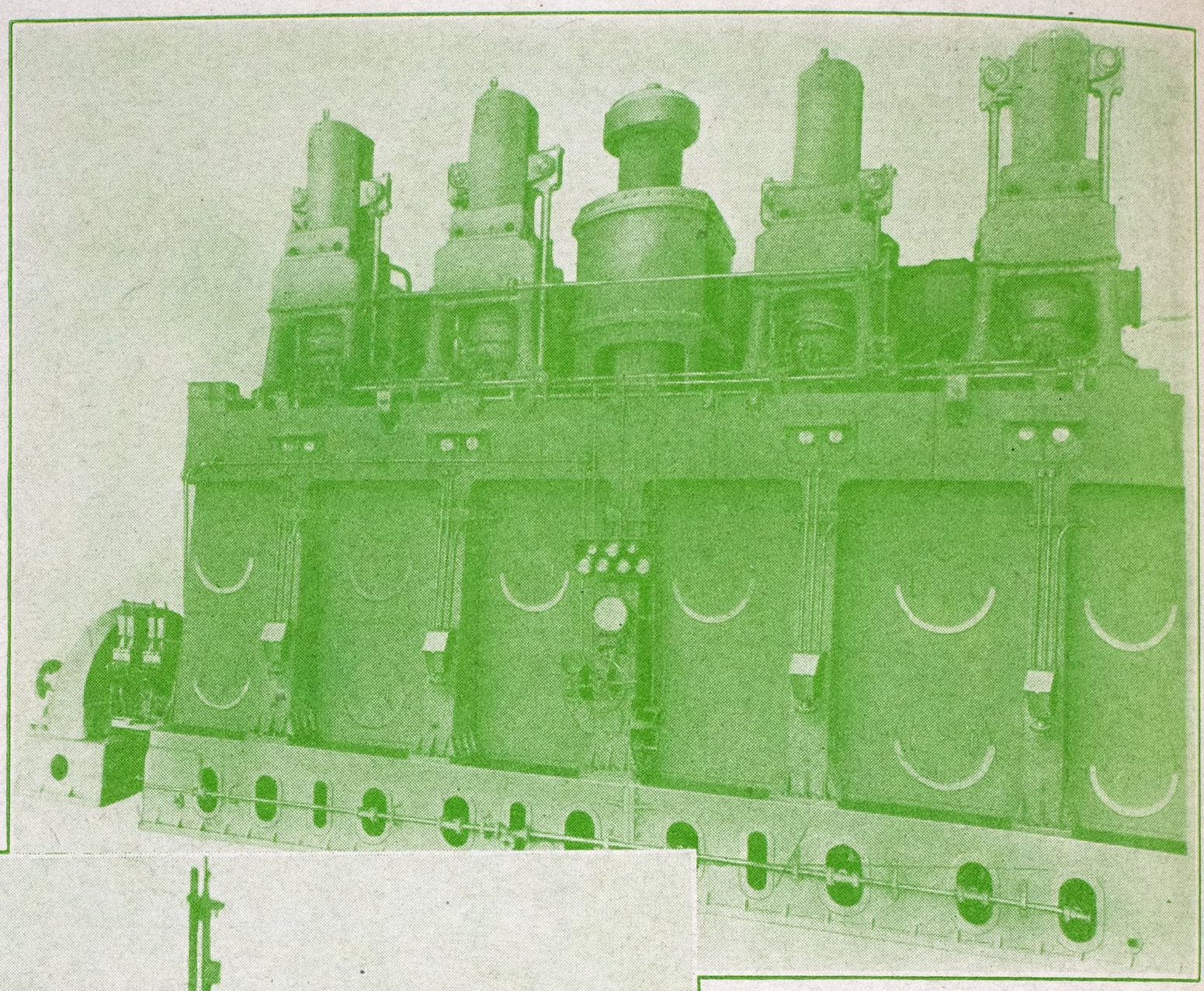
112 Market St.
San Francisco

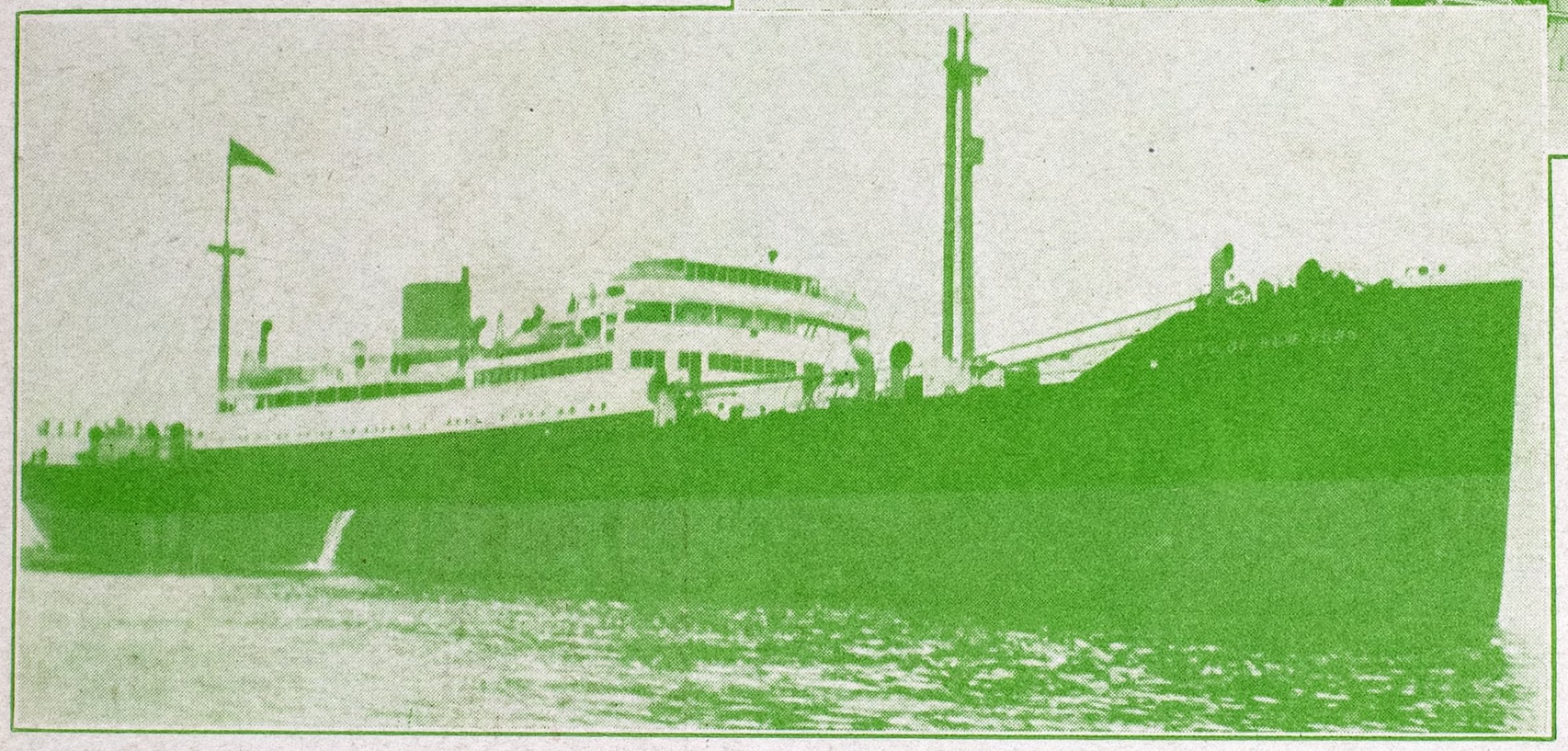
Post Dispatch Bldg.
Houston

50 Church St.
New York

Power with Efficiency

SUN-DOXFORD Opposed-Piston DIESEL ENGINES





The Ms. City of New York, first big combination freight and passenger motorship built in America, is owned by the American South African Line. Her length is 470 ft. 8 in., deadweight capacity 9350 tons, first class passenger accommodation 60, power 5400 s.h.p. and speed 14 knots

Builders of

Passenger and Cargo Vessels—Oil Tankers

Unlimited facilities for

MARINE REPAIRS

Two floating Dry Docks

11,000 Tons Lifting Capacity Each

SUN SHIPBUILDING & DRY DOCK COMPANY

Shipyard & Main Office
CHESTER, PA.

25 Broadway
NEW YORK

Vol. 60, No. 10, Oct., 1930, issue of MARINE REVIEW, published monthly at Cleveland, Ohio. Entered as second class matter at the post office Cleveland, Ohio, under the act of March 3, 1879. Subscription price $3.00 a year in U. S.; Canada, $4.00; Great Britain, £1; single copies, 35c.

80%

of 6,000 to 15,000 TON SHIPS Under Construction June 30, 1930 Are . . .

MOTORSHIPS

	Steamers	*Motorships*
Great Britain	20	85
Germany	5	17
Holland	None	14
United States	8	3
Sweden	None	11
Japan	None	11
France	5	2
Denmark	None	5
Spain	None	4
Italy	1	3
Russia	None	4
Norway	None	1
Total	39	160

Get Firm Bids From Shipyards on

BUSCH - SULZER DIESELS

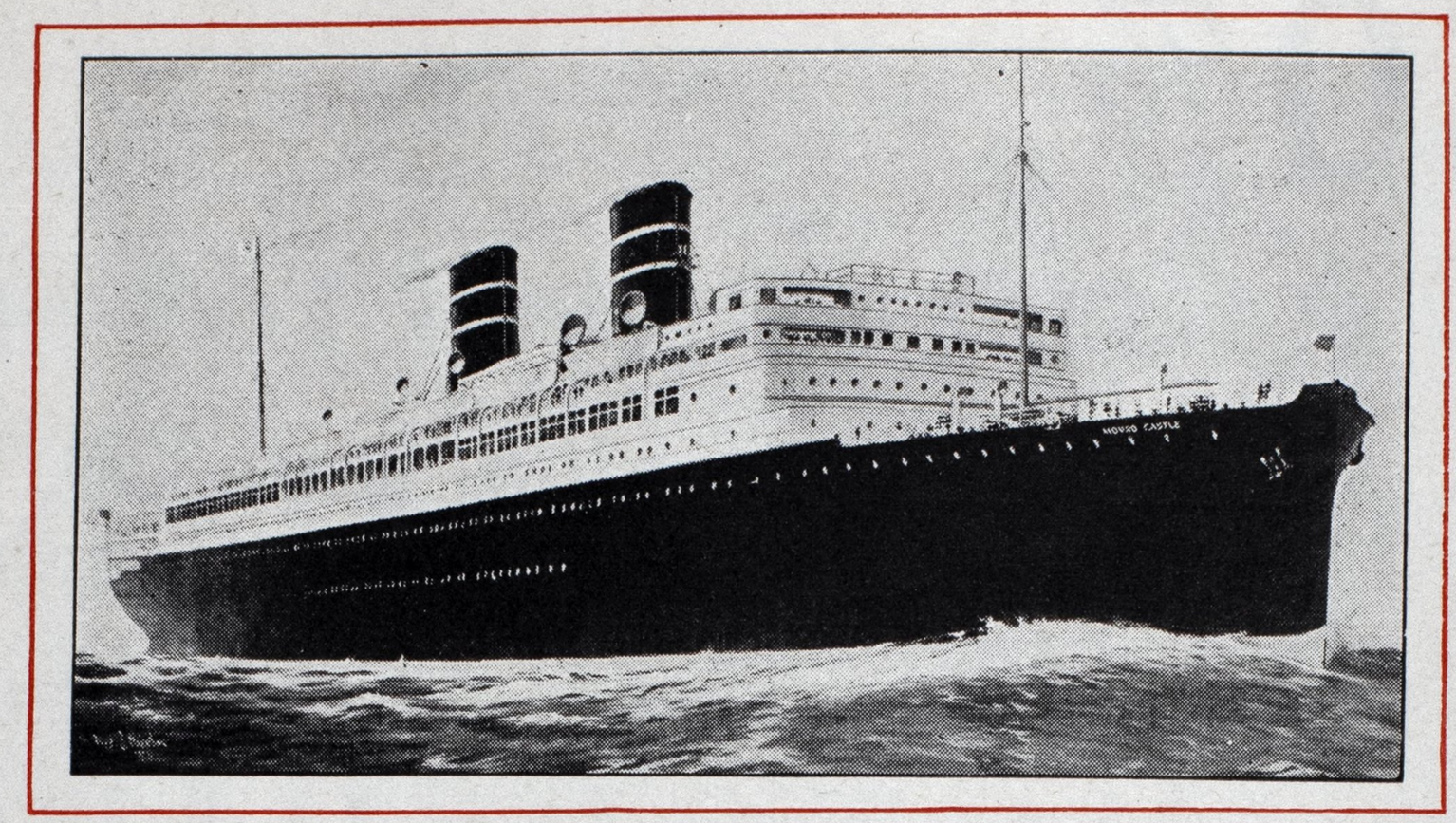
(Standardization Permits Attractive Prices)

BUSCH-SULZER BROS. — DIESEL ENGINE CO.

ST. LOUIS

New York — 2 Rector St. San Francisco — Rialto Bldg.

Gargoyle D. T. E. Oils Lubricate 53% of the World's Ships of over 20,000 Tons



S. S. "Morro Castle"

clips 13 hours from New York-Havana service . . .

also uses **Gargoyle Marine Oils**

59 hours from New York to Havana instead of 72!

When the new Ward Line S. S. *Morro Castle* clipped 13 hours and 20 minutes from the regular schedule of 72 hours from New York to Havana, her two sets of turbo-electric generators and motors were lubricated with Gargoyle Marine Oils.

The *Morro Castle* is one of the fastest and most luxurious ships under the American flag. The decision of her owners to use Gargoyle Marine Oils is another distinguished tribute to Vacuum Oil Company service to the marine world. *Bremen*, *Europa*, *Gripsholm*, *Ile de France*, *Leviathan*, *Majestic*, *Mauretania*, *Statendam*—and now the *Morro Castle*—are only a few in the long list of famous ships on the oceans of the world that use Gargoyle Marine Oils.

An experienced Vacuum Oil Company representative and a ready supply of Gargoyle Marine Oils are available to you in more than 300 of the world's leading ports.

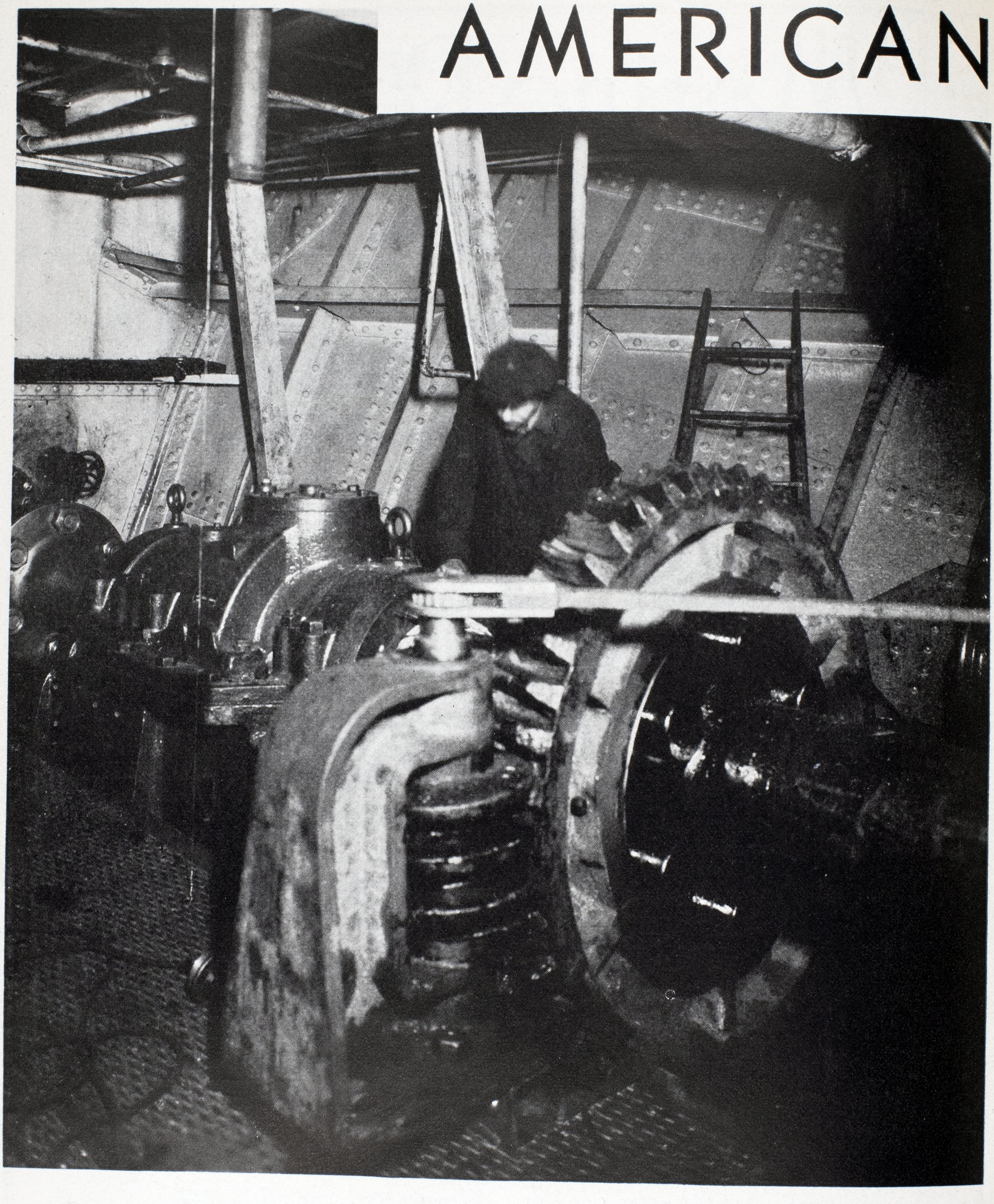
GARGOYLE

Marine Oils

A grade for every type of service

Vacuum Oil Company — *Specialists in the manufacture of high-grade lubricants for every class of machinery Obtainable everywhere in the world* — ***New York, U. S. A.***

AMERICAN



The AMERICAN

CLEVELAND
American Ship Building Co.

LORAIN
American Ship Building Co.

BUFFALO
Buffalo Dry Dock Company

SHIP *has only one thought in ship repairs* . . . WILL THIS JOB SERVE THE CUSTOMER DEPENDABLY?

DEPENDABILITY, as almost every ship operator knows, is vital in ship repairs. At American Ship this idea is paramount. That is why, whenever you send repair jobs to "American," you always get *good*, reliable work. And you get it swiftly, too.

To give you this result, American Ship has concentrated complete ship building and repair resources . . . modern equipment and adequate stores of raw materials . . . at each of its five conveniently located ship yards on the Great Lakes.

At each of its ship yards also, American has gathered an alert, skilled personnel with a keen sense of corporate responsibility. So closely is this corporate spirit related to personal responsibility that it uniformly expresses itself through the doing of each job in the best way possible, as quickly as possible.

Our customers appreciate this speed and dependability for they have found that it makes their ship repairs cost least in the long run. And they send us their small repair jobs as well as the big ones.

More and more, other ship operators and owners are deciding that good, dependable repair work is really the cheapest. They, too, are turning to American Ship for all their ship repairs . . . big jobs and little.

SHIP BUILDING Co

SOUTH CHICAGO
Chicago Ship Building Co.

SUPERIOR
Superior Shipbuilding Co.

R-2124

The Most Powerful Direct-Driven Diesel Tug On the Atlantic Coast

The tugboat "K. Whittelsey," recently built for the Oil Transfer Corporation, is the most powerful direct-driven Diesel tug in service on the Atlantic Coast.

It is equipped with an Ingersoll-Rand solid-injection, direct-reversing marine oil engine rated at 800 horsepower. The tug is now in service towing barges on the Atlantic seaboard.

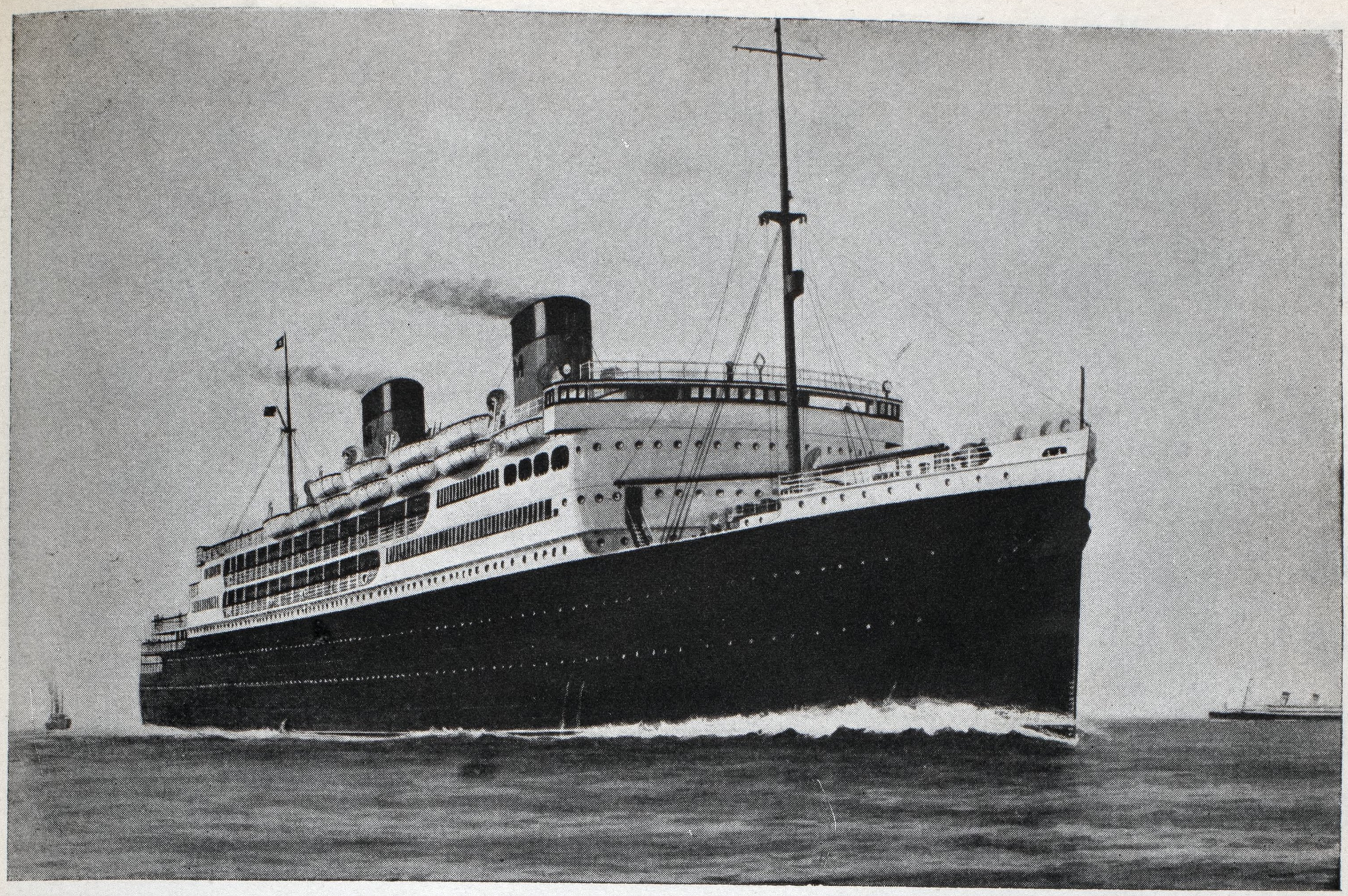
The Oil Transfer Corporation also owns another I-R Diesel tug, "Hustler," which has been in service for seven years. The fine record of efficient and dependable service established by this boat resulted in the building of the "K. Whittelsey."

INGERSOLL-RAND CO. - 11 Broadway - New York City

Branches or distributors in principal cities the world over

For Canada refer—Canadian Ingersoll-Rand Co., Limited
10 Phillips Square, Montreal, Quebec

Ingersoll-Rand 90-MOE



One of three 26,000 ton liners now under construction for the Matson Line at Fore River Plant, Quincy, Mass.

Another Trans-Pacific Liner

for the

OCEANIC STEAMSHIP COMPANY

Matson Line

An order for a third great liner for the Oceanic Steamship Company was recently placed with Bethlehem.

These three ships, now under construction at Fore River Plant, will have: Overall length 632 ft., Beam Mld., 79 ft., Draft 28 ft., Displacement: 26,000 tons, Speed: 20 knots.

BETHLEHEM SHIPBUILDING CORPORATION, LTD.
Bethlehem, Pa.

General Sales Offices:

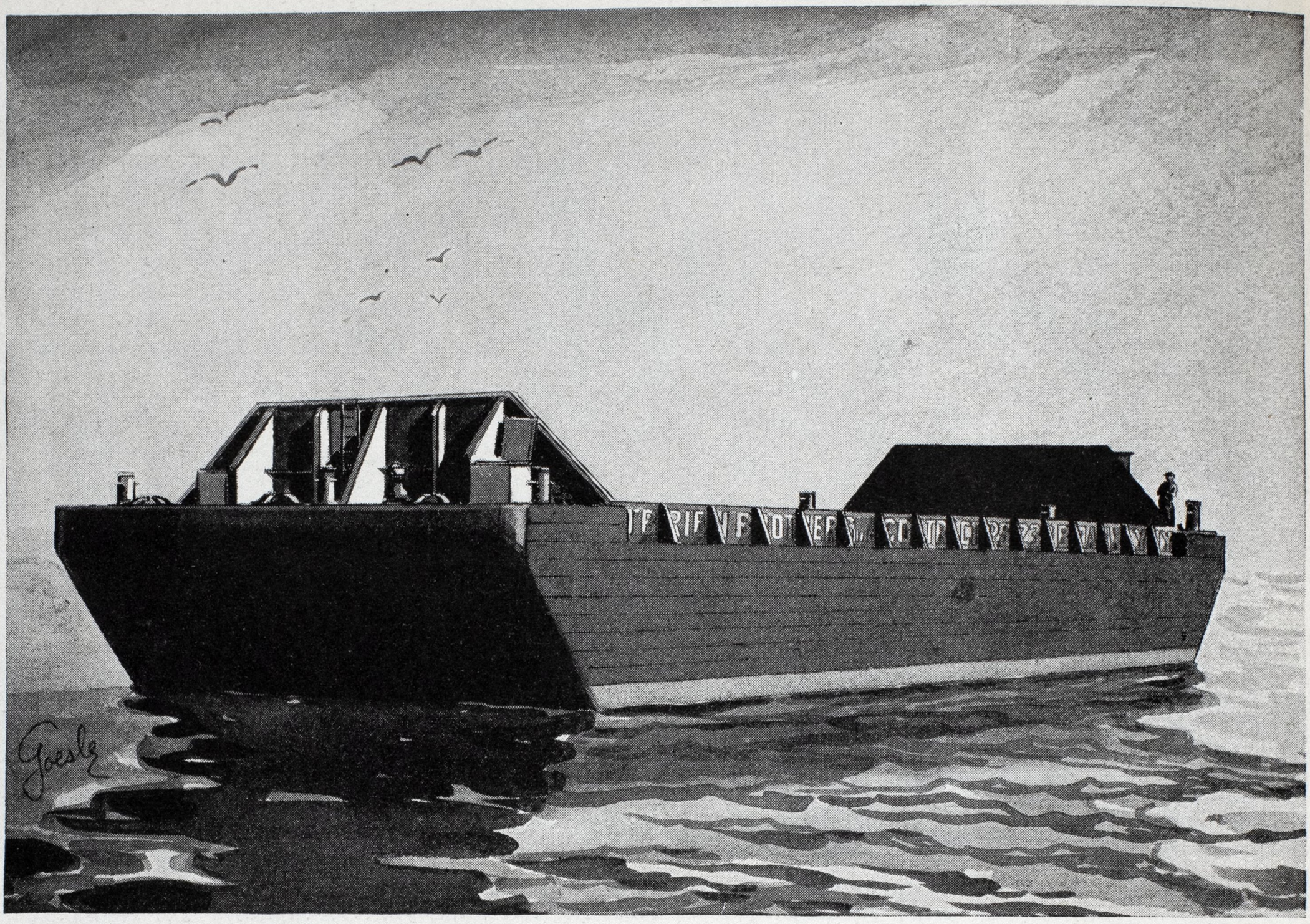
Atlantic Coast: New York:
25 Broadway

Pacific Coast: San Francisco:
20th and Illinois Sts.

District Offices: Boston, Baltimore and San Pedro

BETHLEHEM

FEDERAL WELDED BARGES



SATISFY EVERY REQUIREMENT

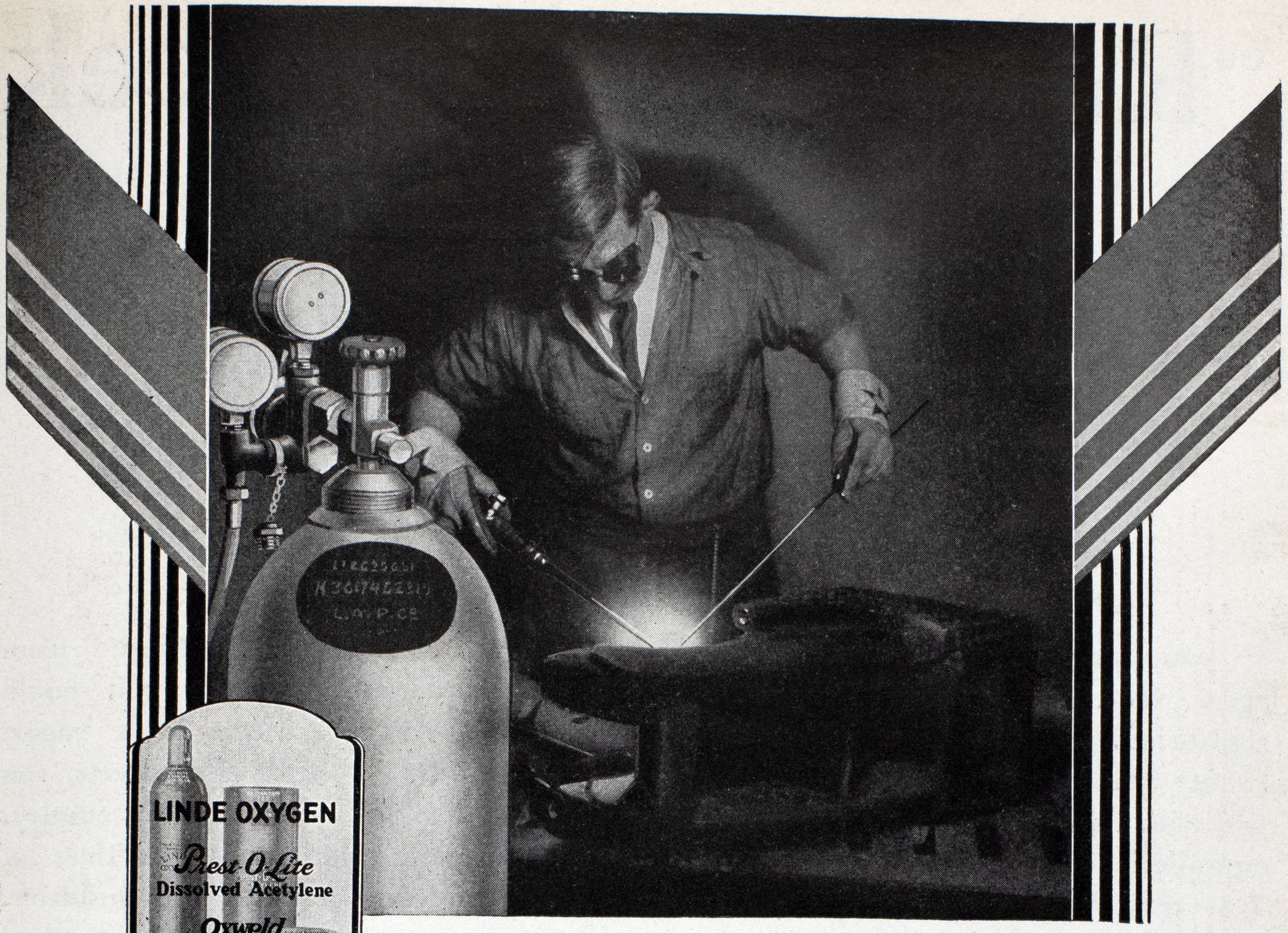
Design adopted after several years investigation...Over 50 miles of welding performed on scows, oil barges and lighters of this design...75 per cent of the welding is done by automatic machinery, securing uniform and precise workmanship...Underwater surfaces doubly sealed by welding on outside and inside.

Damage repairs simple, wherever hand welding is available.

FEDERAL SHIPBUILDING AND DRY DOCK COMPANY

GENERAL OFFICE AND WORKS: LINCOLN HIGHWAY, KEARNY, NEW JERSEY

SUBSIDIARY OF UNITED STATES STEEL CORPORATION



OXWELDING—
Insurance Against Delay

PLANTS equipped for effective oxy-acetylene welding work are insured against production delays through broken or damaged metal equipment.

Whether through the central welding department of a large organization or the single portable welding outfit of a smaller plant this adaptable metal working process is available to overcome the delays occasioned by accidents or wear.

THE LINDE AIR PRODUCTS COMPANY, THE PREST-O-LITE COMPANY, INC., OXWELD ACETYLENE COMPANY, UNION CARBIDE SALES COMPANY,
Units of UNION CARBIDE AND CARBON CORPORATION
General Offices . . . New York UCC **Sales Offices . . in the Principal Cities**
65 Linde plants . . . 48 Prest-O-Lite plants . . . 174 Oxygen Warehouse stocks . . . 156 Acetylene Warehouse Stocks . . . 42 Apparatus Warehouse stocks . . . 245 Union Carbide Warehouse stocks

"Report for the Week Ending——"

If this were the name of your business paper you would keep it in the VAULT.

IN your morning's mail are two packages. One is sealed and stamped and registered. You open it, revealing twenty typed pages, bound in blue and tied with tape. It is a report specially compiled for you and it cost $500. You read it with a sense of its urgent importance and place it in the vault for safe keeping.

The other package comes in a second-class wrapper. You open it, revealing a familiar cover and a familiar name. It is the current copy of your business paper, published for you and for thousands of others in your industry, and its cost to you is just about the price of a good cigar.

Yet between the familiar covers of this paper is a weekly or a monthly report that may well be more important to you than the carefully guarded typed and blue-bound manuscript.

For here is a report gathered from a thousand sources that you could never penetrate. Here is a report compiled by a staff of experts you could not possibly afford to employ. Here are the plans and practices of others in your business or industry. Here are new methods that cut costs, speed sales, increase profits. Here are hints of new markets and new merchandise. Here, in the crisp—ready to use, ready to apply to your needs, are facts you want to know—when you want to know them.

Stop! Look at your business paper again. Do not judge it by its price. Only the fact that you share it with others brings it to you at a fraction of its worth.

Judge it by its true character — a complete, current, *indispensable* special business report — immediately helpful to you.

THIS SYMBOL *identifies an ABP paper . . . It stands for honest, known, paid circulation; straightforward business methods, and editorial standards that insure reader interest . . . These are the factors that make a valuable advertising medium.*

THE ASSOCIATED BUSINESS PAPERS, INC.
TWO-NINETY-FIVE MADISON AVENUE · NEW YORK

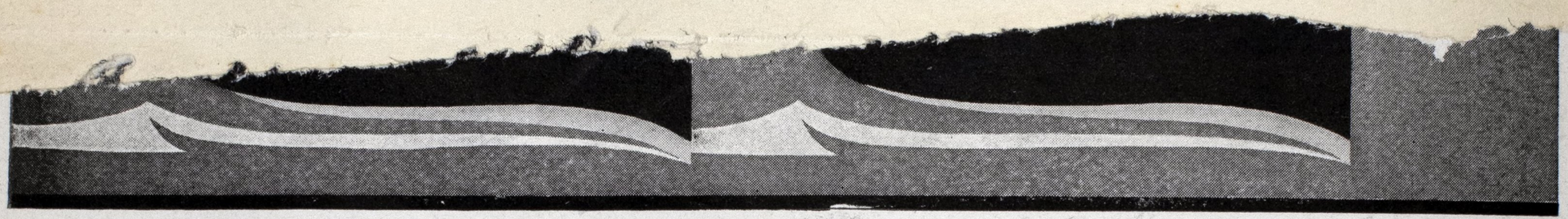
124-X

Some Other Ships We Have Built

Auto Ferry, LA SALLE
Auto Ferry, ESSEX
Car Ferry, WABASH
Car Ferry, CHIEF WAWATAM
Car Ferry, ST. MARIE
Car Ferry, ANN ARBOR No. 5
Twin Screw Excursion Steamer, THOUSAND ISLANDER
Self Unloading, JOHN W. BOARDMAN

Toledo Shipbuilding Company, Inc.

Toledo, Ohio



A $10,000,000 WAGER

AS STARTLING as it must sound, the two new express boats of the Ward Line represent a gigantic wager—a wager on the fair play of our sea-going public. For on that highly coveted trade route from New York to Cuba, the Ward Line has placed in service two super-ships—all-electric from stem to stern—the *Morro Castle* and the *Oriente.*

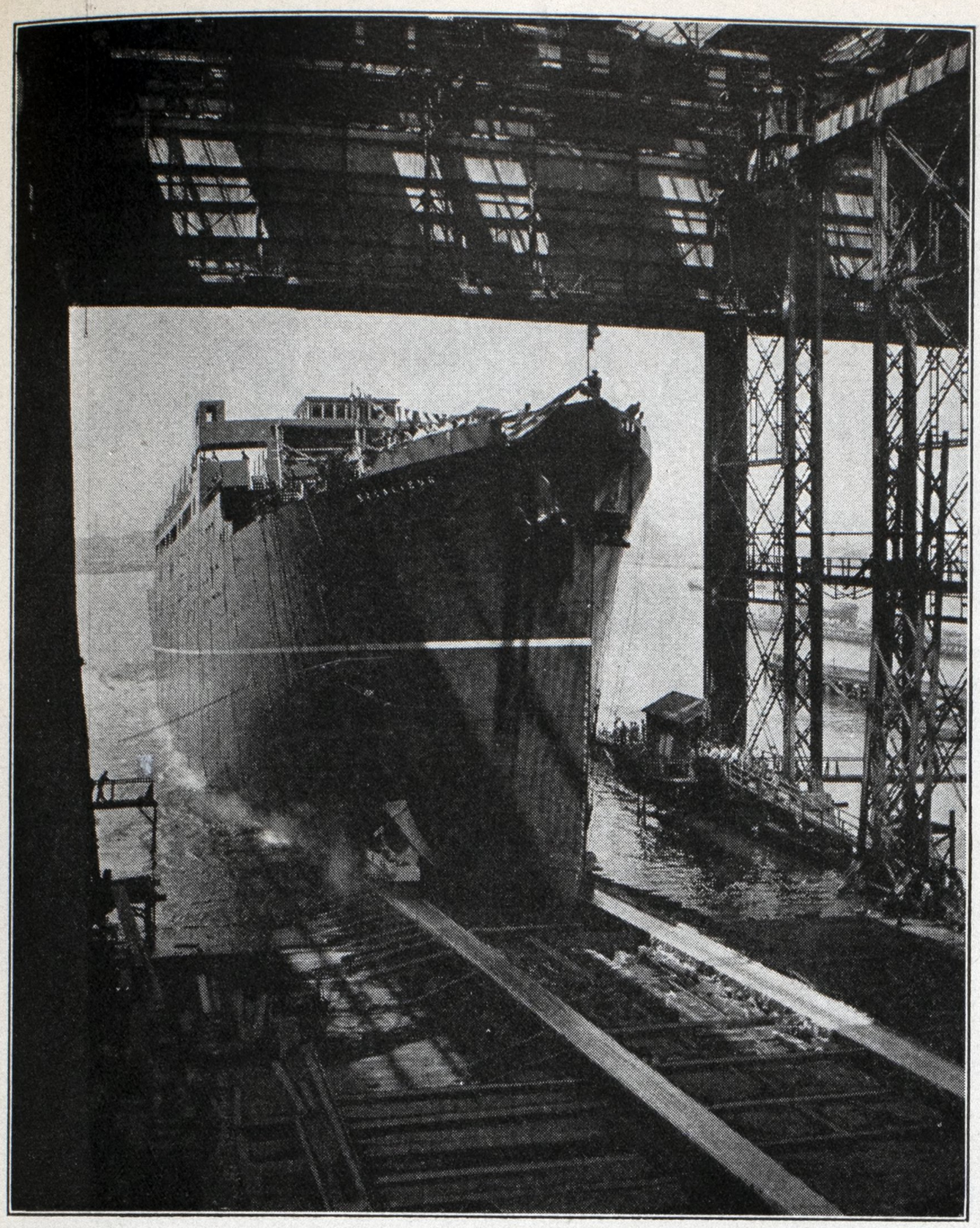
An American naval architect, an American shipbuilder, an American boiler maker, and an American manufacturer of turbine-electric drive have bent their efforts in a common cause—that the prestige of our merchant marine be upheld.

And their combined efforts have culminated in two vessels which bow to none. In speed, in comfort, in luxurious transportation, they exemplify the most advanced engineering practice in the marine field. As far as a passage to our neighboring republic, Cuba, is concerned, there is every reason for the support of American ships.

GENERAL ELECTRIC

173-12H

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES



The Launching of a Ship . . . and a Programme

●

S. S. Excalibur, one of the first vessels on which the Shipping Board granted a construction loan under the provisions of the Jones-White Act.

CONFIDENT of future progress in the American Merchant Marine, more marked than that which has occured at any time in the past, New York Shipbuilding Company dedicates its experience, its engineering skill and its plant facilities to the task of meeting the demands that this progress will bring.

It offers ship owners and operators a yard especially designed for the construction of passenger and cargo ships of the largest size and power, in the shortest possible time.

●

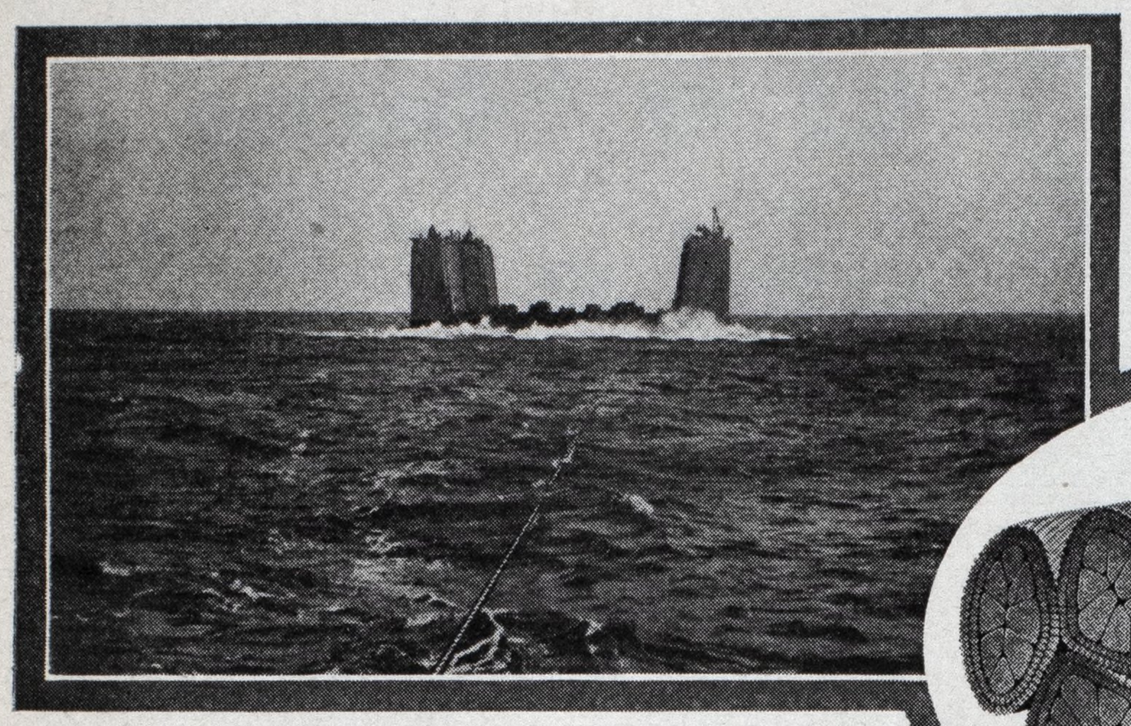
NEW YORK SHIPBUILDING CO.

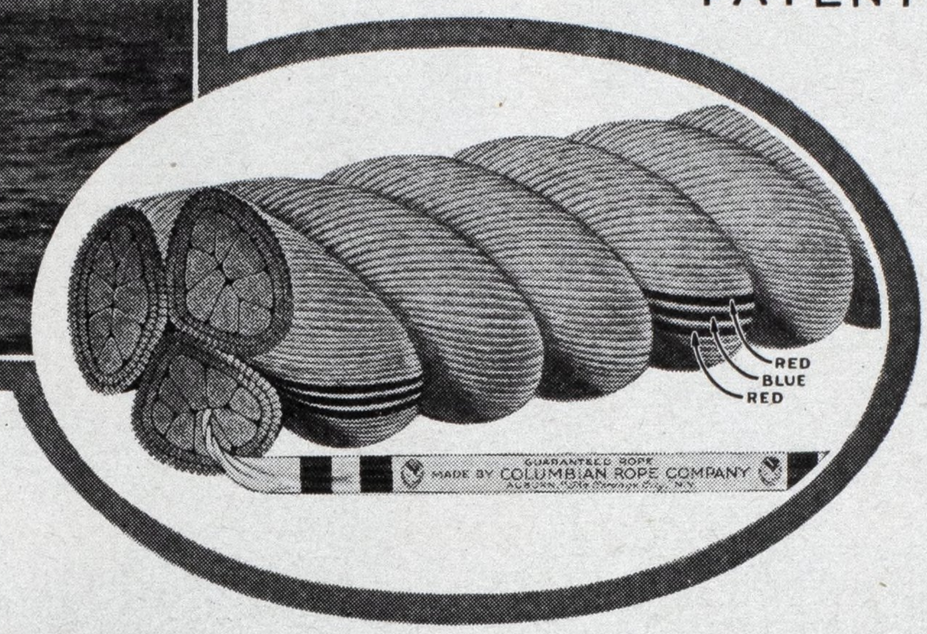
Main Office and Works:
CAMDEN, N. J.

New York Office:
420 LEXINGTON AVE.

COLUMBIAN TOW-RO

PATENTED





Columbian Manila Tow-Ro is a specialist, made for just one purpose — towing — every kind of towing. Use Tow-Ro when you have a tough towing job. It will show you that its new construction makes it superior to any line you have ever used.

Here is the way Columbian Tow-Ro stacks up on paper. A strong, tough double-thickness of regular size yarns comprises the outside jacket. This jacket resists outside abrasive wear and securely protects the heart of the line. This heart is a new type of construction that does the business. It is composed of large slightly pre-twisted yarns which not only give the line a great surplus of strength but also assure that it will keep its shape.

To make Tow-Ro still more desirable, it has flexibility without distortion, it is thoroughly waterproofed, it can be easily spliced and is positively guaranteed by the famous Columbian *Tape-Marker*. It is also readily identified by the red, white, blue, white and red, surface markers.

If these qualifications look good to you on paper, try Columbian Tow-Ro on your next job. What it will do for you when you actually use it knocks the spots off anything we can tell you about it. It is the towing line with a wallop—the king of Tow-Lines! Use Columbian Tow-Ro.

COLUMBIAN ROPE COMPANY

332-90 Genesee Street

Auburn, N. Y. "*The Cordage City*"

Branches— New York Chicago Boston New Orleans Philadelphia

MORE TOWING MILES PER LINE

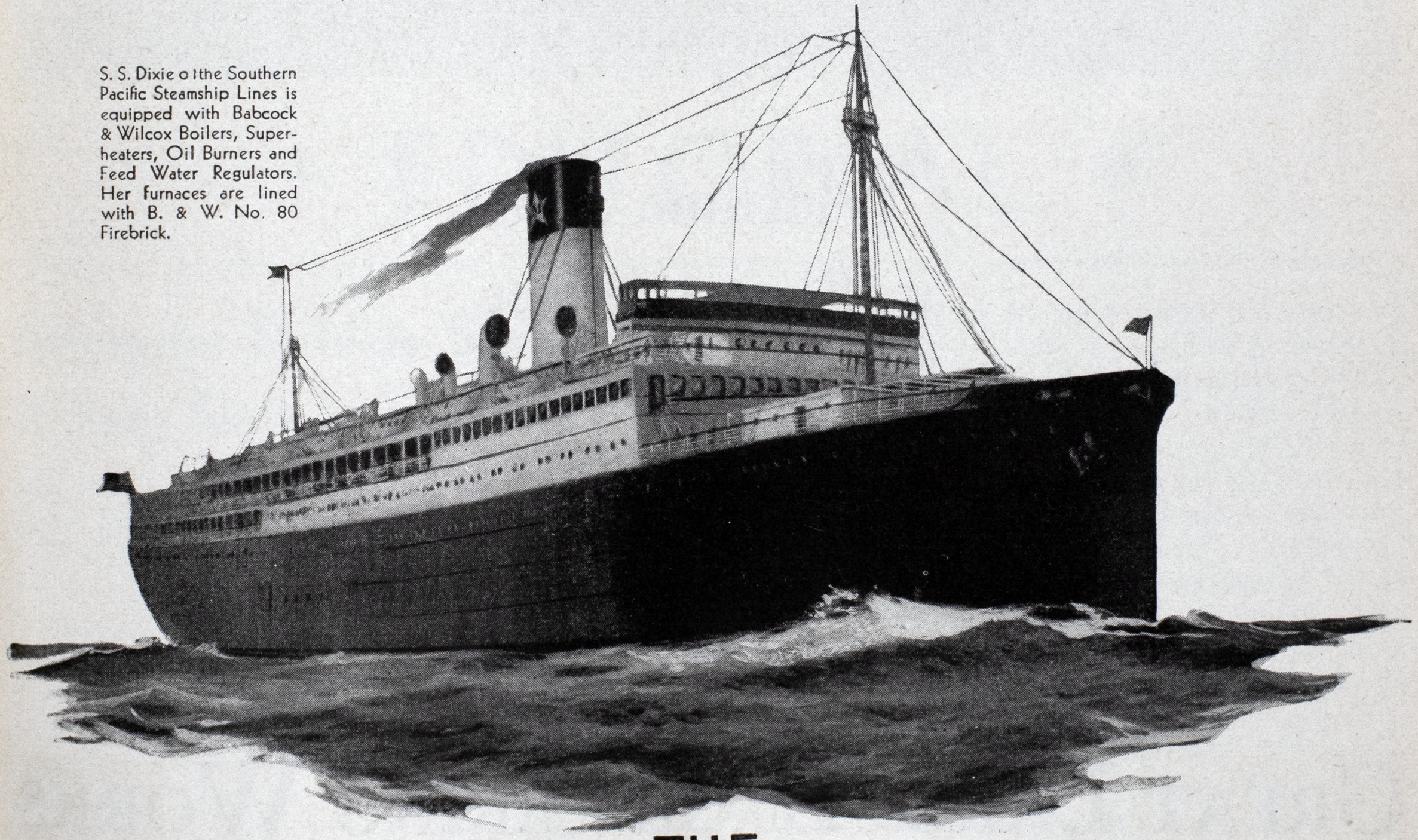
Modern Steam

Saves over $30,000 per year in operation of S. S. Dixie

The Southern Pacific Steamship Lines operate three ships of practically the same horse power and tonnage over exactly the same route and on the same time schedule. One vessel, the S. S. Dixie, uses Modern Steam at 350 pounds pressure. Of the other two ships, one uses steam at about 200 pounds, and one at 250 pounds.

By the use of Modern Steam the Dixie saves over $19,600 per year in fuel cost, compared with the average fuel costs of the two other ships. An additional saving of more than $10,600 in wages and subsistence is also recorded.

All three ships are equipped with Babcock & Wilcox Water Tube Boilers, Superheaters, and Oil Burners—an investment in economy.



S. S. Dixie o tthe Southern Pacific Steamship Lines is equipped with Babcock & Wilcox Boilers, Superheaters, Oil Burners and Feed Water Regulators. Her furnaces are lined with B. & W. No. 80 Firebrick.

THE

BABCOCK & WILCOX COMPANY

85 LIBERTY ST. NEW YORK, N. Y. M 15

Machine Shop
at Rivard Street,
Detroit, where we
Build and Repair
Engines

GREAT LAKES ENGINEERING WORKS

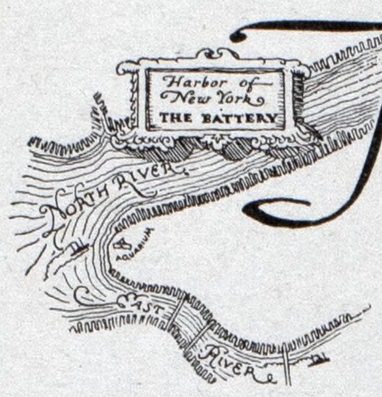
Shipbuilders and Engineers

Engine Works Equipped For General Heavy Machine and Foundry Work
Detroit, Michigan

GENERAL OFFICES
River Rouge, Michigan
Cleveland Office: Union Trust Bldg.

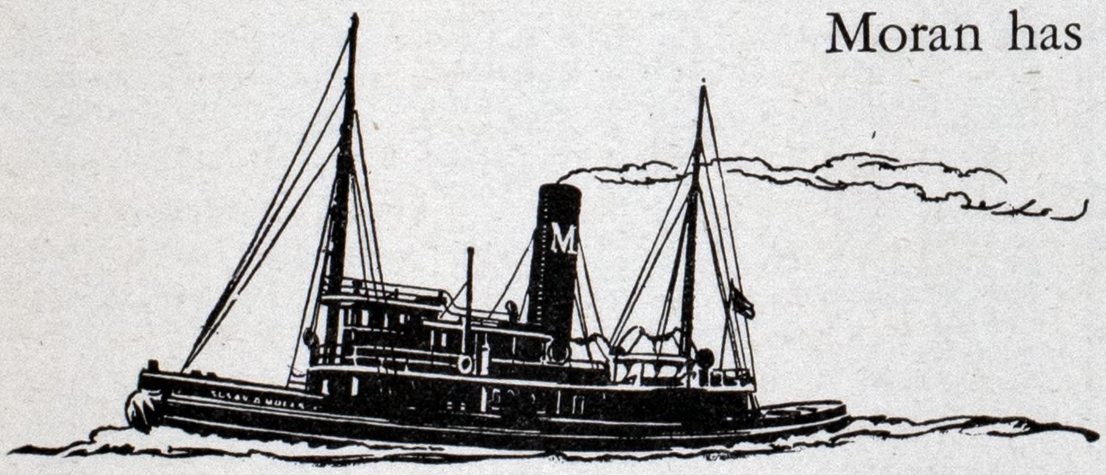
Complete Shipbuilding Dry Dock and Repair Facilities
River Rouge, Mich., and Ashtabula, Ohio

MORAN HISTORY *is* *Harbor History*



MORAN Service began with the beginnings of New York Harbor. Nearly seventy years of growing up with this great Port, supplying new services, improving old services always a little in advance of the need. Three generations of marine transportation experience, three generations of the tradition that facilities and service must be—not just adequate but—more than adequate. It's a history no less stirring than the history of the Harbor itself, of difficult jobs efficiently handled, of constantly rising to emergencies, of full and complete mastery of all the complexities of harbor traffic and harbor ways.

Important owners and operators know they can trust their property to the experienced handling of Moran. Moran has the financial integrity, the safe margin of equipment—quantity and quality—and the 24-hour direction and supervision of marine transportation and traffic experts. Moran coastal and long distance towing is equally distinguished by the same characteristics.



The ocean-going tug, "Susan A. Moran", has had a notable history, towing from North Atlantic and Gulf ports to Canadian and South American ports. One of her especially distinguished performances was the towing of the S. S. "Pyrula" from New York to Curacao, Dutch West Indies. The "Susan" is an oil burner of 1200 H. P., 133 ft. in length, with fuel capacity for 28 days.

MORAN TOWING AND TRANSPORTATION COMPANY, INC.

17 Battery Place, New York *Phone Whitehall 1340*

MORAN Service

"Clarkat"—38½" wide, 78" long, 51" turning radius, 2000-lb. max. drawbar pull, ½ to 7½ mi. per hr.

"CLARKAT" TRUCTRACTOR
the tireless stevedore

Supplied with the "Clarkat" your gang will make short work of putting on cargo—or taking it off. So compact that it gets around handily in cramped quarters, so powerful it easily handles 25-ton loads on trailers. Three-wheel construction enables it to turn neatly in a 51" radius, to negotiate narrow doors, crowded wharves, pulling its trailer-train swiftly, quietly.

It's easily handled—any man who drives a car will find it simple. Its savings in time and labor—its elimination of loading and unloading delays—make it a cost-cutter—a dividend-payer.

The Clark Tructractor Co.
Battle Creek, Mich.

Attach this ADVERTISEMENT to your inquiry

Special Note!

Clark vehicles are gas-powered—therefore competent for 24 hour continuous service and just as potent the last hour as the first.

Clark 24-hr. continuous service

Ordinary 8-hr. service

LOWER cargo handling costs *immediately available . . .*

IF you are faced with declining tonnage and keener competition for business, you need lower costs—and you need them *quick*.

Electric trucks will give them to you.

IN hundreds of marine and railroad terminals, Elwell-Parker Electrics are saving from $400 to $1200 per truck each month.

And savings become effective immediately.

Elwell-Parkers operate along the same aisles as hand trucks . . . supplementing present equipment . . . always setting a faster pace for the entire handling operation.

With practically no change, you could put Elwell-Parkers in your terminal tomorrow. Your cost sheets next week would begin to show welcome reductions. Larger loads. Quicker trips. Less time for loading and unloading cargo. Less time for ship and freight car to stand idle. Faster service will prove a big aid in securing business and in *holding* it. And you will be able to handle cargo at lower cost and greater profit.

Your nearest Elwell-Parker Field Engineer is keyed for action. Call him. Get his recommendations. Or write direct.

THE ELWELL-PARKER ELECTRIC COMPANY, 4209 ST. CLAIR AVENUE, CLEVELAND, OHIO

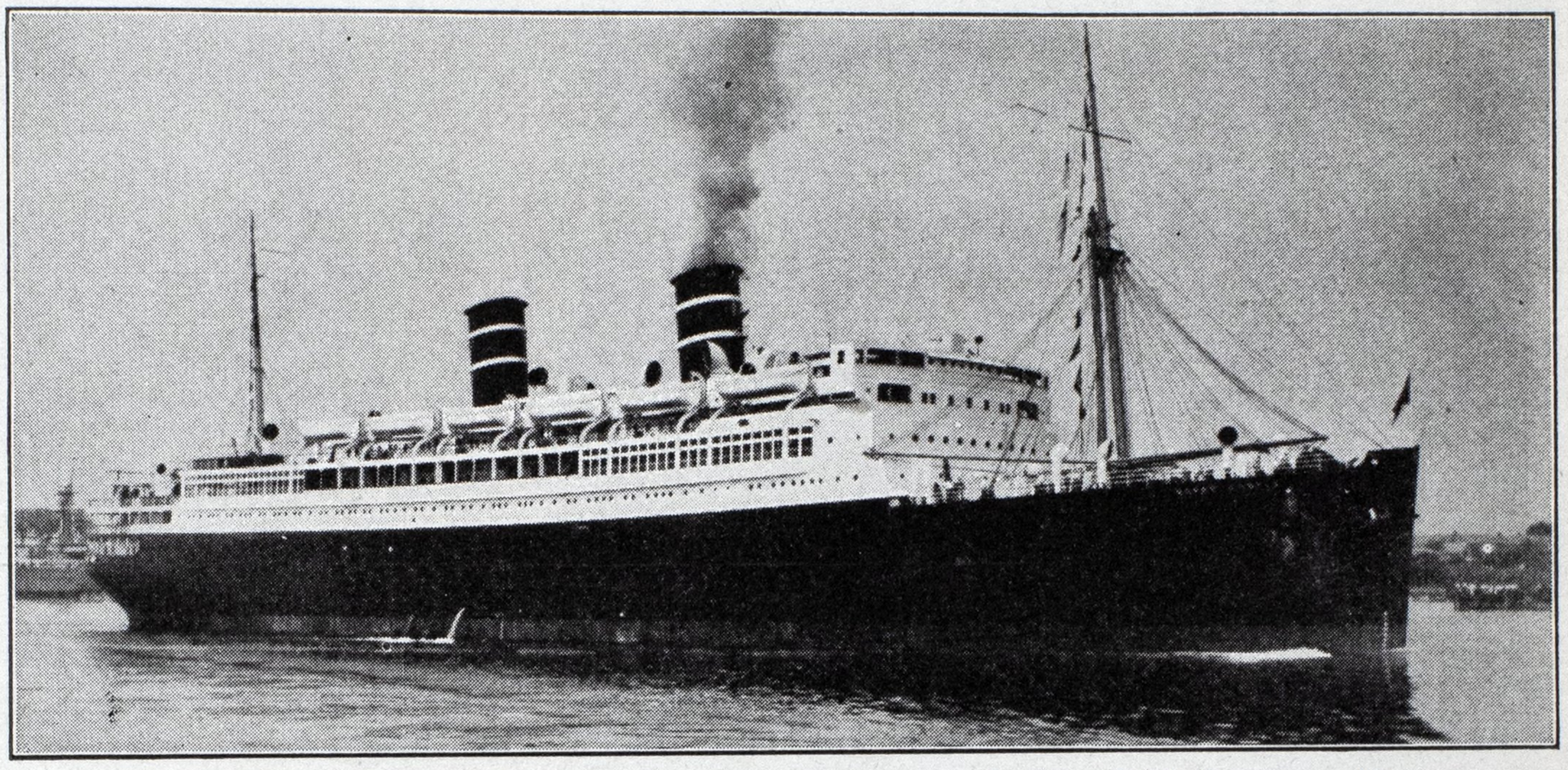
SHIP on SKIDS

Elwell·Parker

Designers and Builders of Electric Industrial Trucks Tractors and Cranes for 24 Years.

★ *Oversize motors, heavy in copper, take all the power the battery delivers. No fuses are necessary. Power failure at crucial moments is avoided. This, together with automatic control features protecting operator and truck, will interest your Safety Committee.*

Exides *Guard* the Eyes and Ears of the *Morro Castle*



THE MORRO CASTLE, *17,500 tons, crack new turbo-electric drive ocean liner of the Ward Line, completely equipped with Exide Batteries.*

THE RADIO crackles and hums on the Morro Castle. Her eyes and ears, always on watch, checking position, relaying messages, keeping in touch, receiving news. This vital part of the ship must be safeguarded.

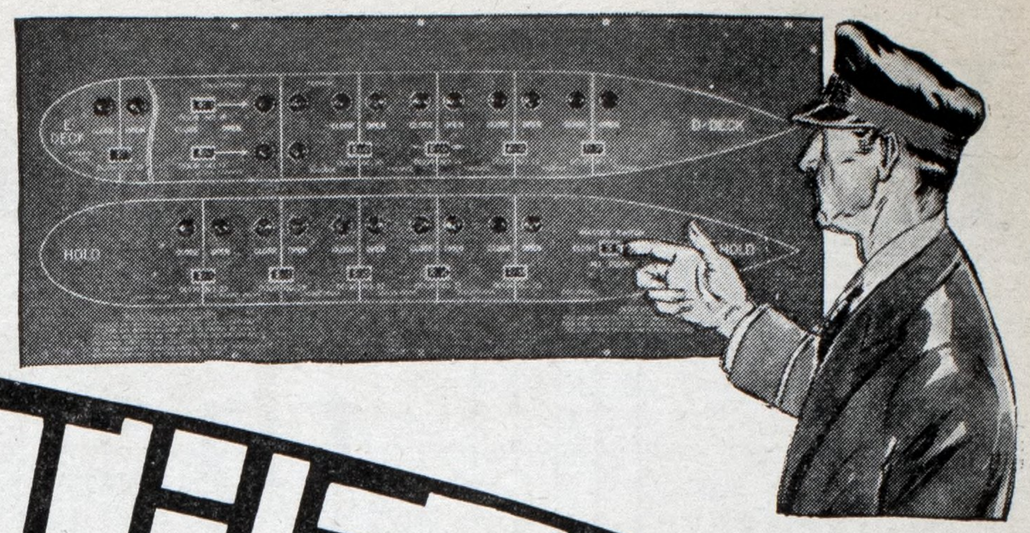
Exide Batteries do just that. This latest addition to the Ward Line is equipped with two 6-cell Exides that are always on the job to operate the emergency radio apparatus; two 11-cell Exides are used alternately to supply power for the interior communication service; and a great 120-cell Exide Battery stands by for instant and automatic emergency lighting and emergency service.

This installation is just one more evidence that Exide Batteries are chosen for absolutely dependable service.

Write for information on Exides and on Exide-Ironclad Batteries and their many varied applications in marine service. We are confident it will interest you. No obligation.

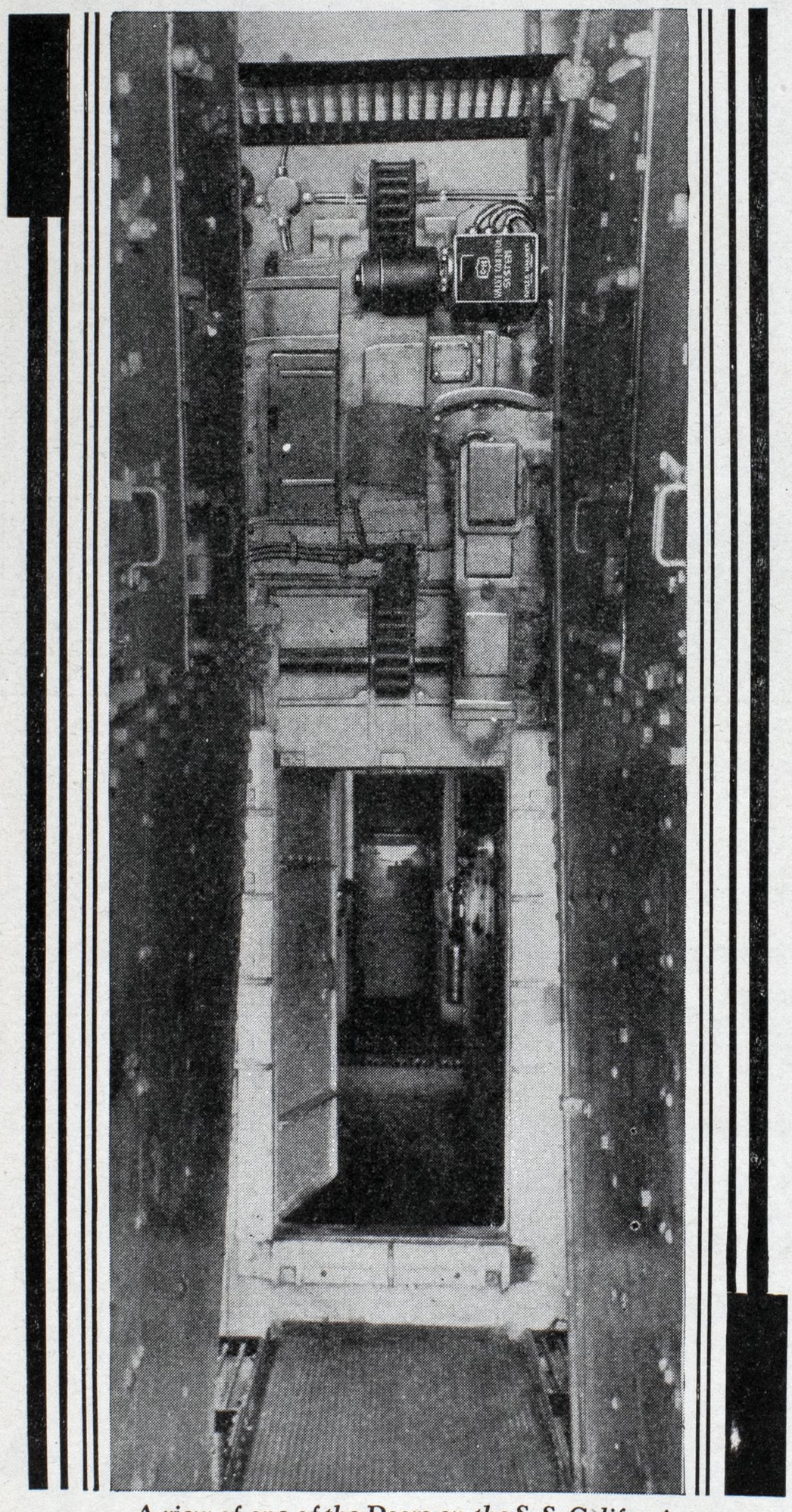
Exide
MARINE BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
THE WORLD'S LARGEST MANUFACTURERS OF STORAGE BATTERIES FOR EVERY PURPOSE
San Francisco *Seattle* *Los Angeles*
Exide Batteries of Canada, Limited, Toronto



ALL OVER THE SHIP

Cutler-Hammer Bulkhead Door Operating System Meets all requirements of the International Conference On Safety of Life at Sea.



A view of one of the Doors on the S. S. California of the Panama-Pacific S. S. Co.

C-H Bulkhead Door Control Unit is compact, trouble-proof. A high starting torque motor snaps on when the switch is thrown, hits the door with a sharp impact and the door is closed in seconds. Lights flash the position of the door to the officer in the pilot house.

Bulkhead Doors
· CLOSE
At the Flip of a Switch

UP in the pilot house stands the officer responsible for the safety of vessel, crew and cargo. To him—by means of C-H Bulkhead Door System—has been brought *finger tip control* of every bulkhead door in the ship. He throws a switch to open a door—or to close one. He can isolate an entire section of his ship as quickly as he can shut one door—in *seconds.* And no member of the crew has to leave his post for slow manual operation of a bulkhead door.

C-H Bulkhead Door System provides a local control station—operated from either side of the opening—but the master control station in the pilot house always reassumes control. C-H Control *permits and does not interfere with* manual operation or local control. Its extremely simple installation makes it the choice of builders and owners today—as it was on the *first U. S. vessel* to have motor-operated bulkhead doors and openings. C-H Engineers stand ready to cooperate with builders of yachts, steamships, diesels—all craft where bulkhead control is to be installed. Write for the new Cutler-Hammer book, "*Modern Watertight Door Control.*"

CUTLER-HAMMER, Inc.
Pioneer Manufacturers of Electric Control Apparatus
1322 St. Paul Avenue
MILWAUKEE, WISCONSIN

CUTLER HAMMER

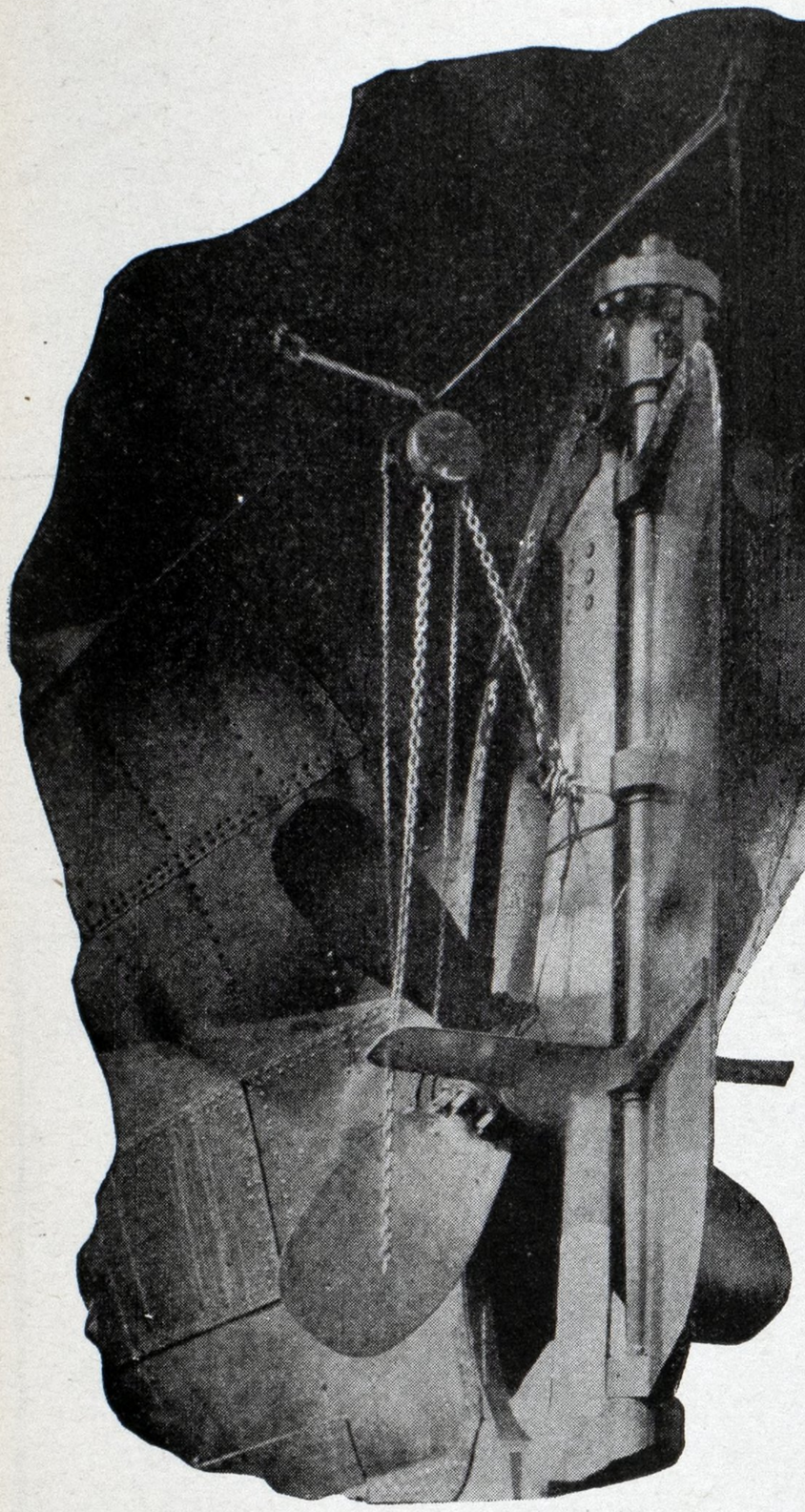
Motor-Driven Bulkhead Door Operating Systems

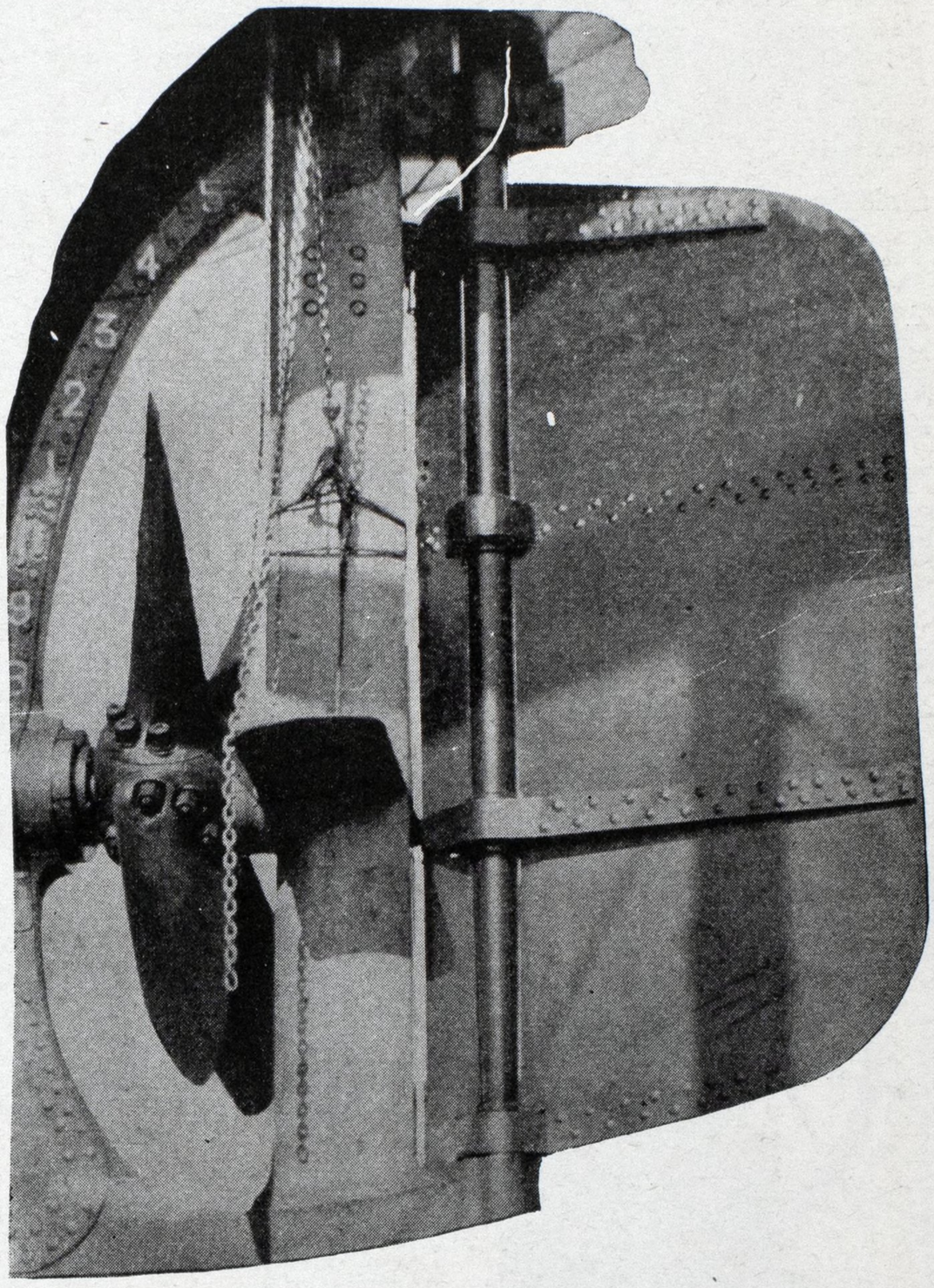
A-319

Collingwood Shipyards Limited

Collingwood, Ontario

Sole Licencees for Canada— for Star Contrapropellers and Rudders





Photographs show the STAR CONTRAPROPELLER fitted to the steamer "SAND MERCHANT". This installation resulted in a saving in power of 12%. Also, the steering qualities were greatly improved.

STAR CONTRAPROPELLERS have been fitted to 425 vessels representing 2,577,181 tons with an aggregate of 1,035,493 I. H. P.

The main advantages are:

Saving in power of from 10% to 15% for the same speed.
Increase in speed of from 5% to 10% for the same power.
Improved steering, which is important in handling ships in canals and narrow waterways.

Reduction in vibrations.
The Contrapropeller is applicable to all types of vessels.

PLANS AND ESTIMATES WILL BE FURNISHED ON APPLICATION

"STANDARD"
DIESEL FUEL OIL

Recommended by the leading Diesel manufacturers, "Standard" Diesel Fuel Oil enjoys world wide distribution and world wide use. Facilities for bunkering with this highly refined and clean power fuel are found in every port—made available by the vast organization of the Standard Oil Company of New Jersey. Use these facilities and receive this better Diesel Fuel Oil.

Distributing Stations

Atlantic Coast
New York
Baltimore
Norfolk
Charleston
Boston
Portland

Gulf Coast
Baton Rouge
New Orleans
Baytown
Ingleside
Beaumont
Magpetco
Sabine
Galveston
Port Arthur

Pacific Coast
San Francisco
Richmond
San Pedro
San Diego
Astoria
Portland
Point Wells
Aberdeen
Longview
Ketchikan
Juneau
Seward
Tacoma
Willbridge
Seattle
Eureka

Hawaiian Islands
Honolulu

Canada
Halifax
North Vancouver
Prince Rupert
Montreal
Ioco, B. C.

Mexico
Manzanillo
Guaymas
Topolobampo
Yavaros

Panama Canal
Balboa

West Indies
St. Thomas
Trinidad
Curacao
Kingston

South America
Campana
Buenos Aires
Talara

Azores
Ponta Delgada

Cape Verde Islands
Cape Vincent

United Kingdom
Purfleet
Southampton
Liverpool
Brixham
Hull
Newcastle
South Shields
London
Thames Haven
Avonmouth
Glasgow
Belfast
Manchester

France
Havre
Marseilles
Rouen

Norway
Bergen
Oslo (Steilene)

Finland
Helsingfors

Denmark
Copenhagen
Nyborg
Aarhus
Aalborg

Sweden
Stockholm
Gothenberg
Helsinborg
Malmo

Germany
Hamburg
Nordenham
Bremerhaven

Holland
Amsterdam
Rotterdam

Belgium
Antwerp

Italy
Genoa
Venice
Leghorn
Savona
Monopoli
Messina

Africa
Bizerta
Algiers

Turkey
Constantinople

Suez Canal
Port Said

Straits Settlement
Singapore

Greece
Piraeus

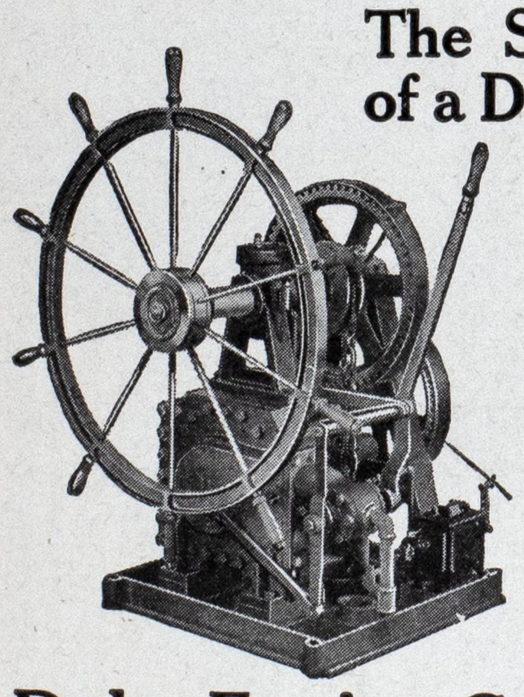
Roumania
Constantza

China
Hong Kong
Shanghai
Hankow
Ichang
Dairen

Japan
Nagasaki
Yokohama
Itosaki
Kobe
Osaka
Tsurmi

Sumatra
Palembang

STANDARD OIL COMPANY OF NEW JERSEY - 26 Broadway, New York



The Strong, Quick Arm of a DAKE Steering Gear

on the tiller chain of your tug or steamer means greater efficiency, safety and economy.

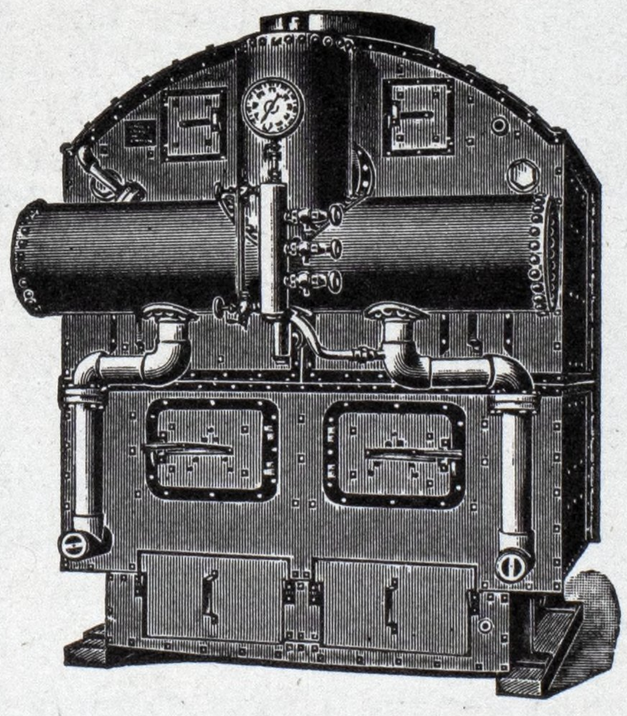
The Dake engine has no dead center; it is always alert, and starts instantly in either direction. This insures easier, quicker and better handling of your boat and saves time, coal and accidents.

The Dake fits into your pilot house and has a hand steering combination feature for emergency use.

Dependable gears at extremely moderate prices.

Ask any skipper who is shipmates with one

Dake Engine Co., Grand Haven, Mich.

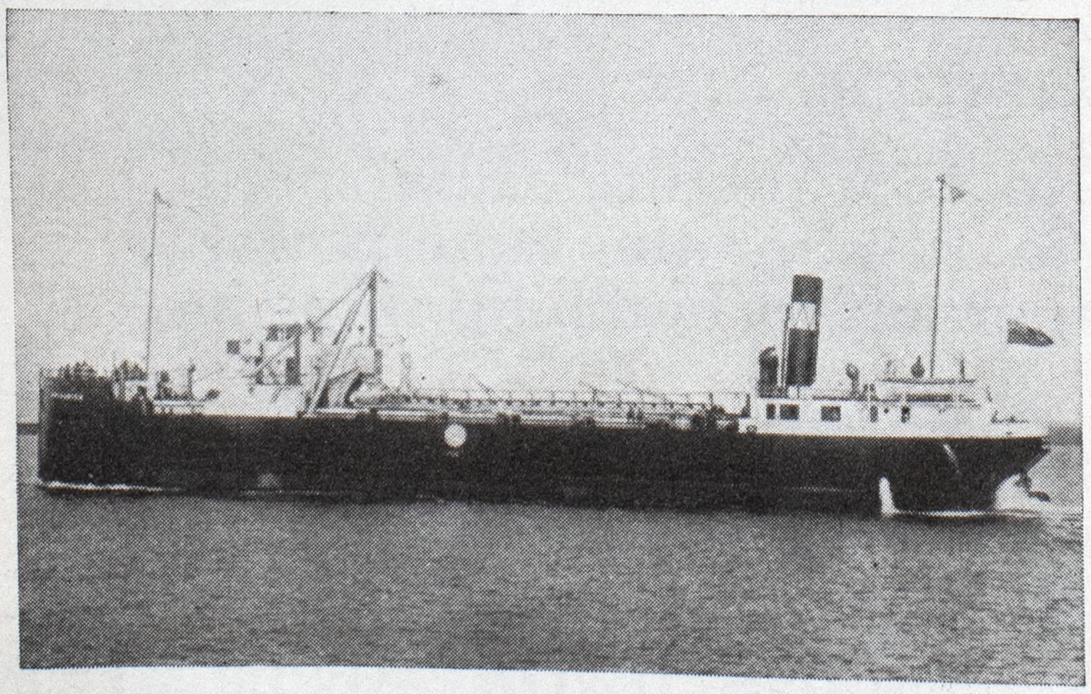


Almy Water Tube Boiler Co.

Builders of Sectional Water Tube Boilers for all types of vessels

Providence, R. I. U. S. A.

CATALOGUE FREE



Steamship BULKARIER

Equipped with

Leathem D. Smith Self-unloading System

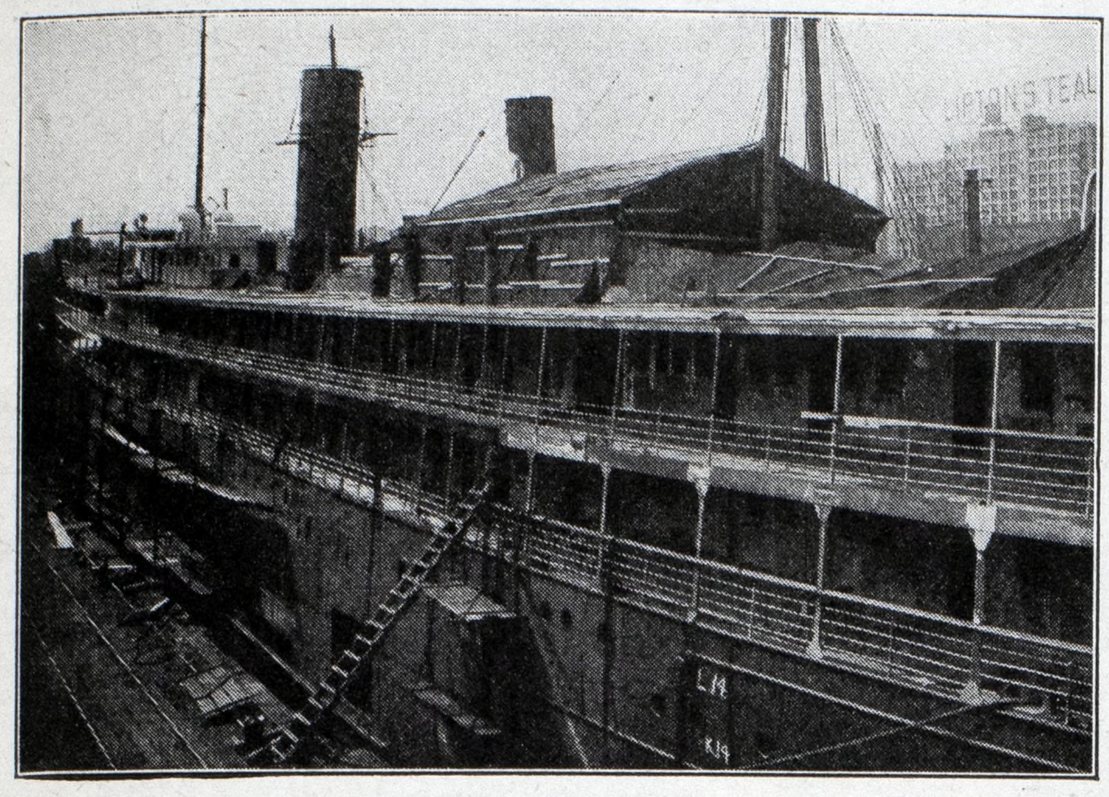
handling bulk cement and crude gypsum in Gulf of St. Lawrence.

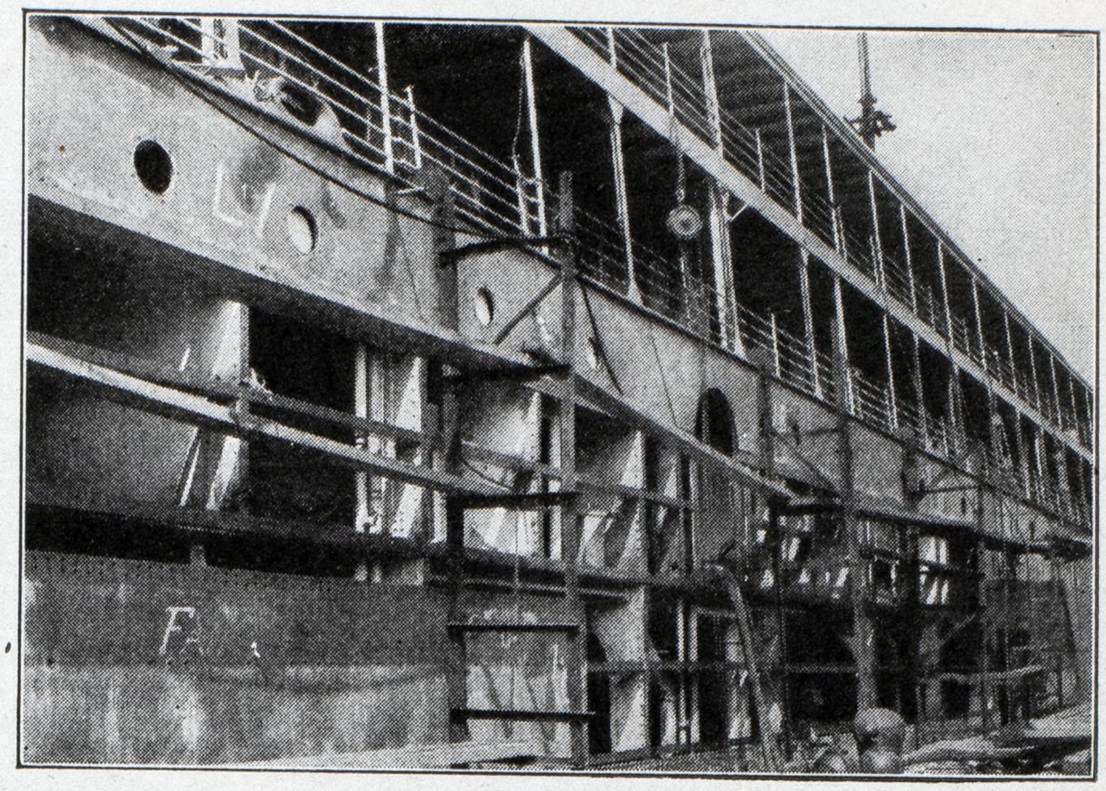
LEATHEM D. SMITH DOCK COMPANY

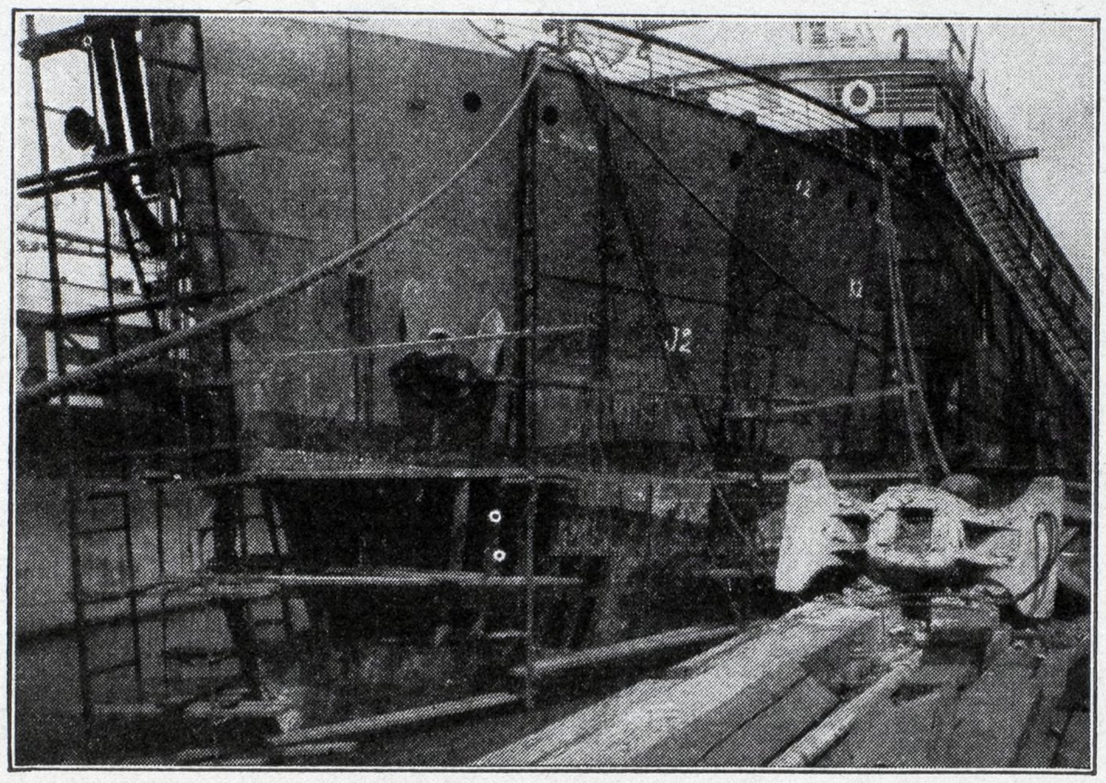
205 W. Wacker Drive
Chicago, Ill.

Plant Location
Sturgeon Bay, Wis.

Four "Earning Days" Saved for the S. S. Fairfax







WHEN United agreed to recondition the Merchants and Miners liner *Fairfax* in 45 days it expressed also its determination to better the contract time if possible. Keeping in mind that a ship earns no money in a repair yard, United exerted every effort to save time. As a result, the *Fairfax* was returned to her owners four days ahead of schedule. Those four days became earning days, for they enabled the *Fairfax* to make a voyage that had not been counted on. It is noteworthy also that United's bid was 15 days under the next low bid. But that is the sort of service that is standard at the Fletcher Plant—where the *Fairfax* was repaired—and at United's four other plants—Crane, Morse, Shewan and Staten Island. The reason for this policy of superior service is obvious—the best customer is a satisfied customer.

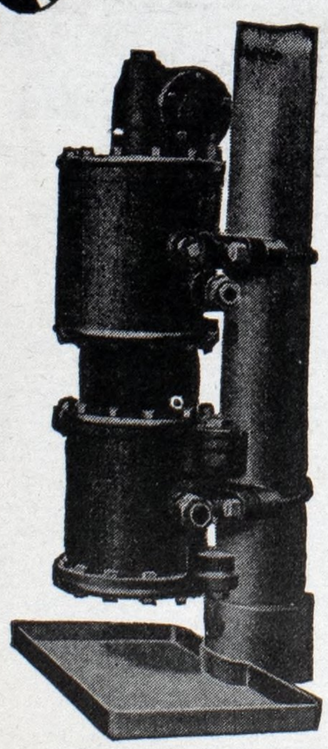
UNITED DRY DOCKS

Incorporated

11 Broadway DIGby 0500 New York

Scaling the bulwark of A. H. Bull & Co.'s S.S. "Cornelia" with Keller size OX Super Valveless Scaling Hammers—air supplied by Westinghouse compressor.

COMPRESSED AIR CUTS SCALING COSTS



The Westinghouse steam driven Air Compressor is compact, rugged, easy to install, ideal for use on board vessels, in the harbor, and in ship yards. Made in four sizes—35, 49, 66, and 150 cu. ft. displacement . . . Motor driven compressors are also available for every purpose — a complete line, in sizes up to 700 cu. ft.

THE hand chipping method of removing rust, paint, or scale from the deck and sides of a ship is slow and inefficient. The modern way—with compressed air—is quicker, more convenient, more economical.

Many steamship companies have equipped vessels with WESTINGHOUSE compressor outfits for this purpose, finding that for the price of one scaling contract with hand chippers, a complete compressor equipment and accessories could be purchased. This also provides a ready means for cleaning machinery, spraying paint, and making emergency repairs.

A trial installation on one boat has time and again demonstrated such marked advantages that the entire fleet eventually was equipped.

WESTINGHOUSE TRACTION BRAKE COMPANY
GENERAL OFFICE AND WORKS , , , WILMERDING, PENNA.

WESTINGHOUSE—NATIONAL
AIR COMPRESSORS

An Achievement in Research produces new Diesel Values!

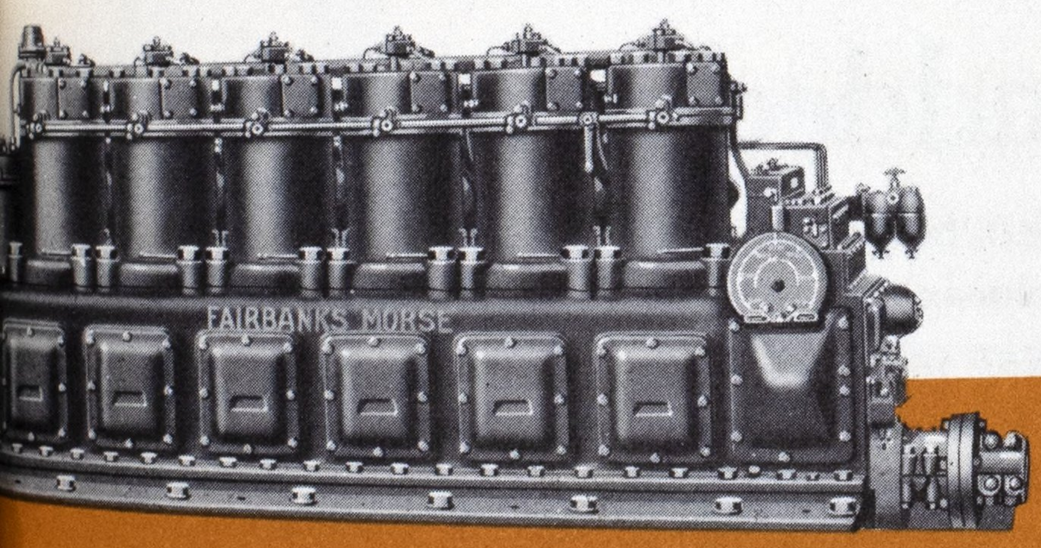
Since the early days of its pioneering, time has brought many changes and new knowledge to the science of Diesel design and construction. The part played by Fairbanks-Morse in this development of the Diesel has been proportionate to its leadership. Through the years millions spent in research have enabled this organization to make those contributions which have established Fairbanks-Morse as America's largest manufacturers of Diesel Engines.

In step with advanced practice in Diesel design, Fairbanks-Morse early recognized the two-cycle, airless-injection type of engine as offering the utmost in simplicity, dependability and over-all operating economy. Today this simpler type engine has attained world-wide recognition of its superiority. Fairbanks-Morse is responsible for its present leadership in America.

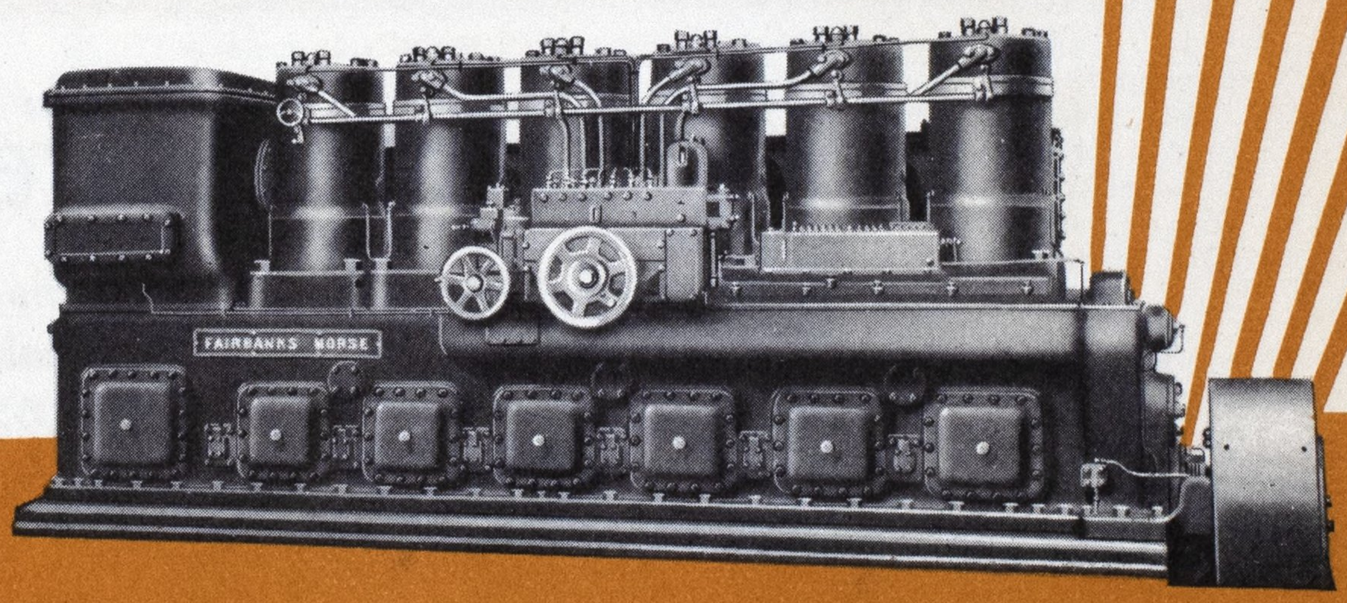
Now, Fairbanks-Morse again offers new improvements which are of major importance to those who are interested in Diesel power. An achievement in research has resulted in remarkable improvement in fuel efficiency of all F-M Diesels.

The result is that the fuel economy of the F-M two-cycle airless-injection engine is unequalled by any other engine of this type. The larger sizes up to 1400 hp. offer such improved efficiencies that the fuel economy of these engines is now unsurpassed by any engine of even more complicated type.

FAIRBANKS, MORSE & CO.
900 S. Wabash Ave., Chicago
Branches with Service Stations in Principal Ports



Cylinder Model 35E 8¾ Direct Reversing Marine Engine

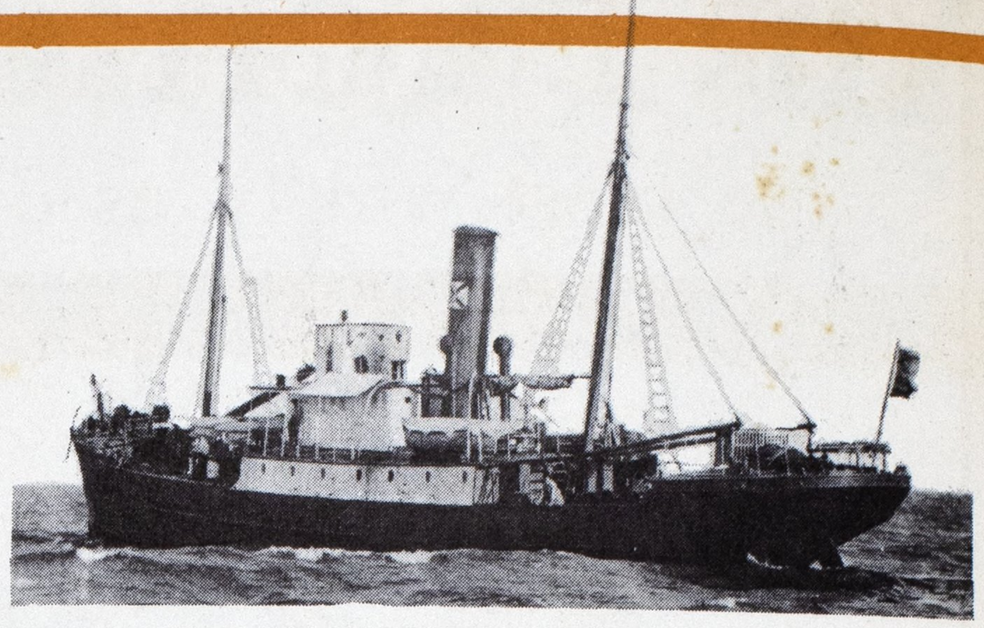


6 Cylinder Model 37 Marine Engine 14" x 17" Cylinder Size

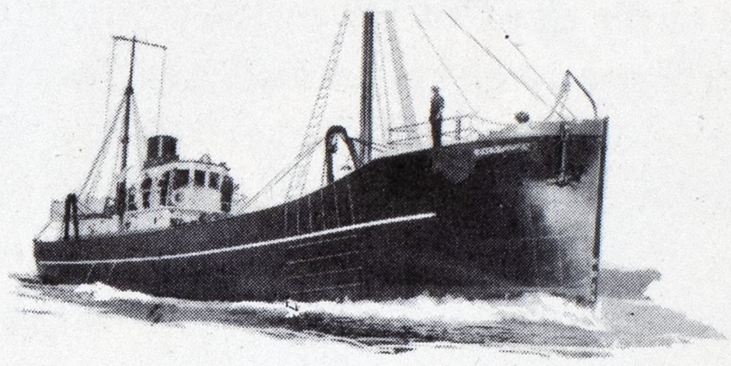
FAIRBANKS-MORSE DIESEL ENGINES

POWER, PUMPING AND WEIGHING EQUIPMENT

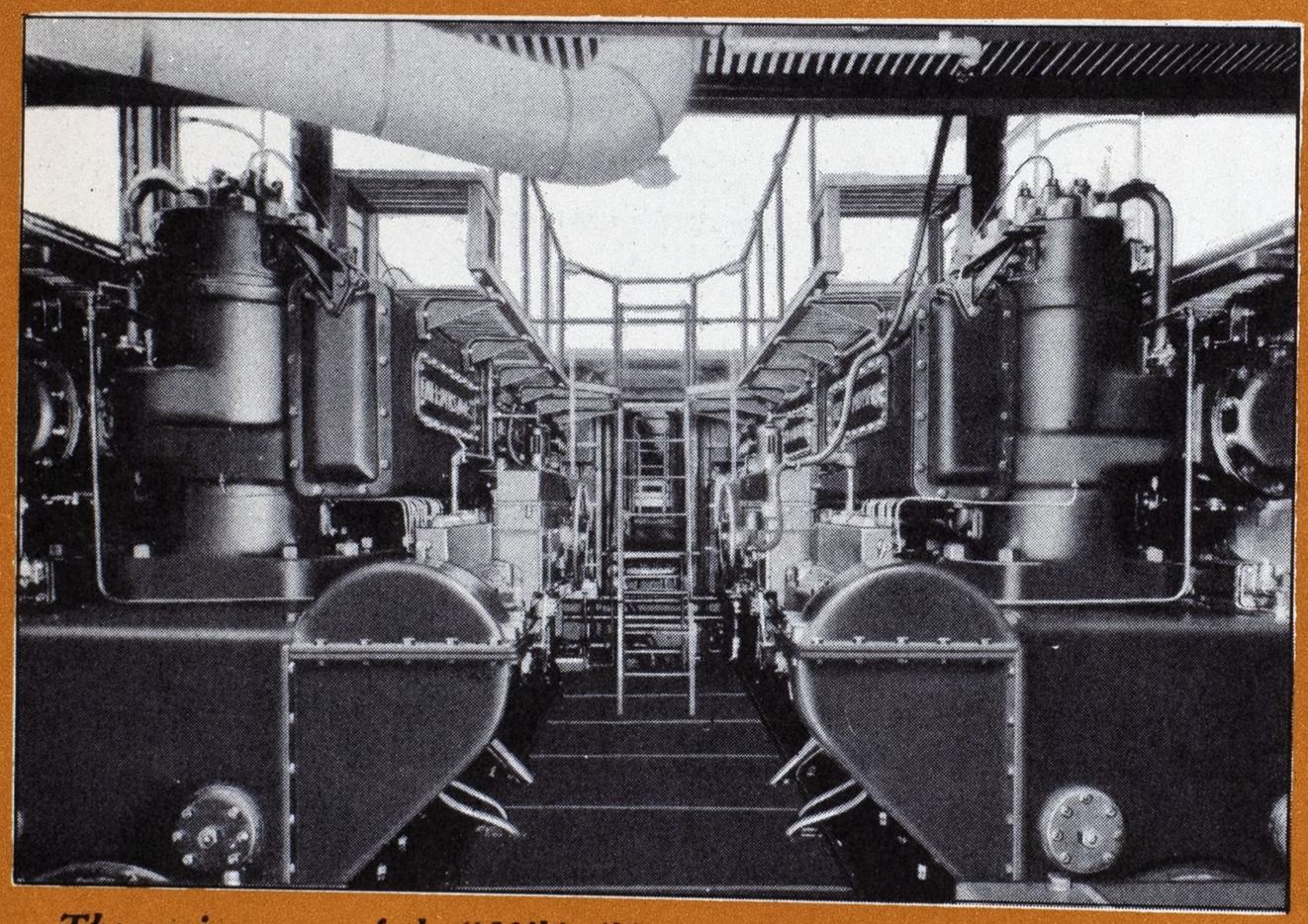
For all types of craft



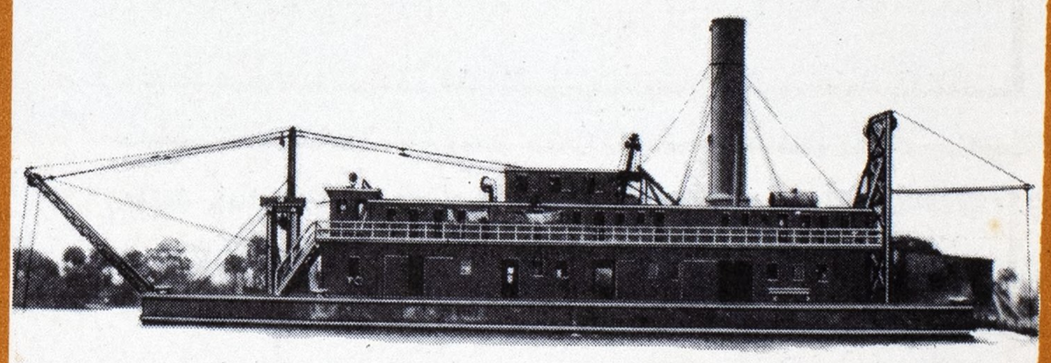
The "San Antonio," a coasting freighter between Montevideo and Buenos Aires has shown increased profits since her steam plant was replaced by a 360 hp. F-M Diesel.



The "Holy Cross" is one of three new trawlers of a standardized F-M Diesel Driven type owned by the Atlantic and Pacific Fish Co. A 360 hp. Diesel for her main power plant and a 120 hp. for operating auxiliaries.



The engine room of the "Mikimiki" a Young Bros. tug. A twin screw job with a 560 hp. F-M Diesel driving each propeller.



The dredge "Davis" owned by the Clark Dredging Co., of Miami. An 840 hp. F-M Diesel drives the 20-inch dredge pump.

F-M Diesels offer added profits

1. Lower fuel costs. 2. Less maintenance (no boiler troubles). 3. No fuel costs when tied up at the dock. 4. Smaller crew in the engine room. 5. More space in the hold for paying cargo. 6. Longer cruising radius. 7. Less idle time for the vessel for refueling, repairs, etc.

FAIRBANKS, MORSE & CO., 900 S. Wabash Avenue, Chicago

Branches with Service Stations in Principal Ports

OA27.329

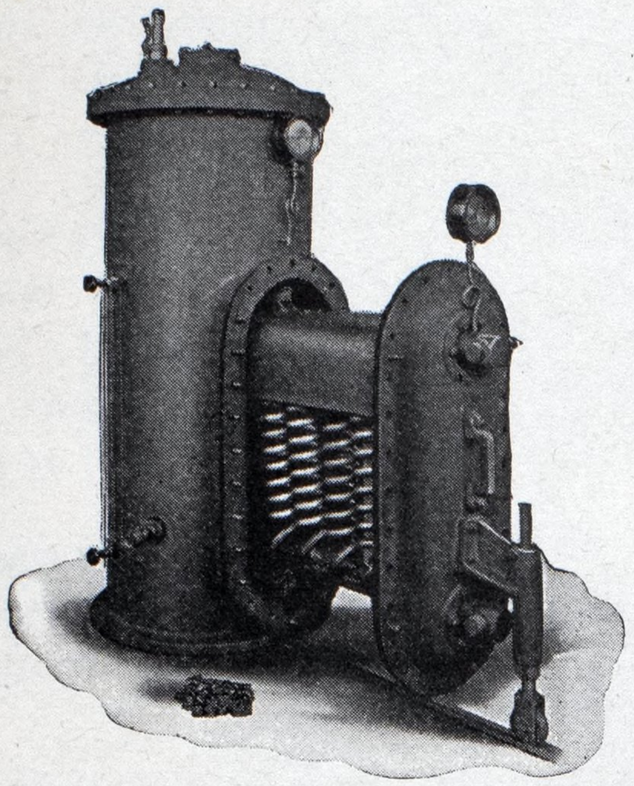
FAIRBANKS-MORSE

DIESEL ENGINES

POWER, PUMPING AND WEIGHING EQUIPMENT

G-R Evaporators

the most widely used on shipboard

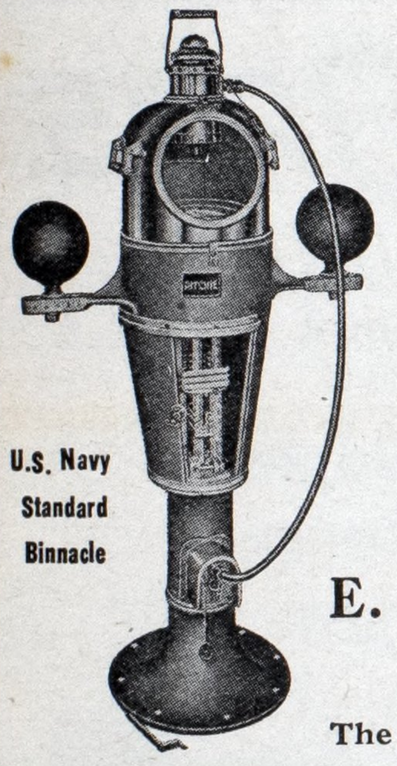


Assure pure boiler feed
Automatically scale-shedding
Increase boiler capacity

The Griscom-Russell Co.

285 Madison Avenue, New York
Chicago, 20 N. Wacker Drive

*



THE RITCHIE LIQUID COMPASS

The Standard Liquid Compass the world over.
Used Exclusively in U. S. Navy for over 40 years.
Over 65,000 on Merchant Vessels in all parts of the world.
Made in all sizes 2 to 12" dia.
Magnets for adjusting Purposes.

E. S. RITCHIE & SONS

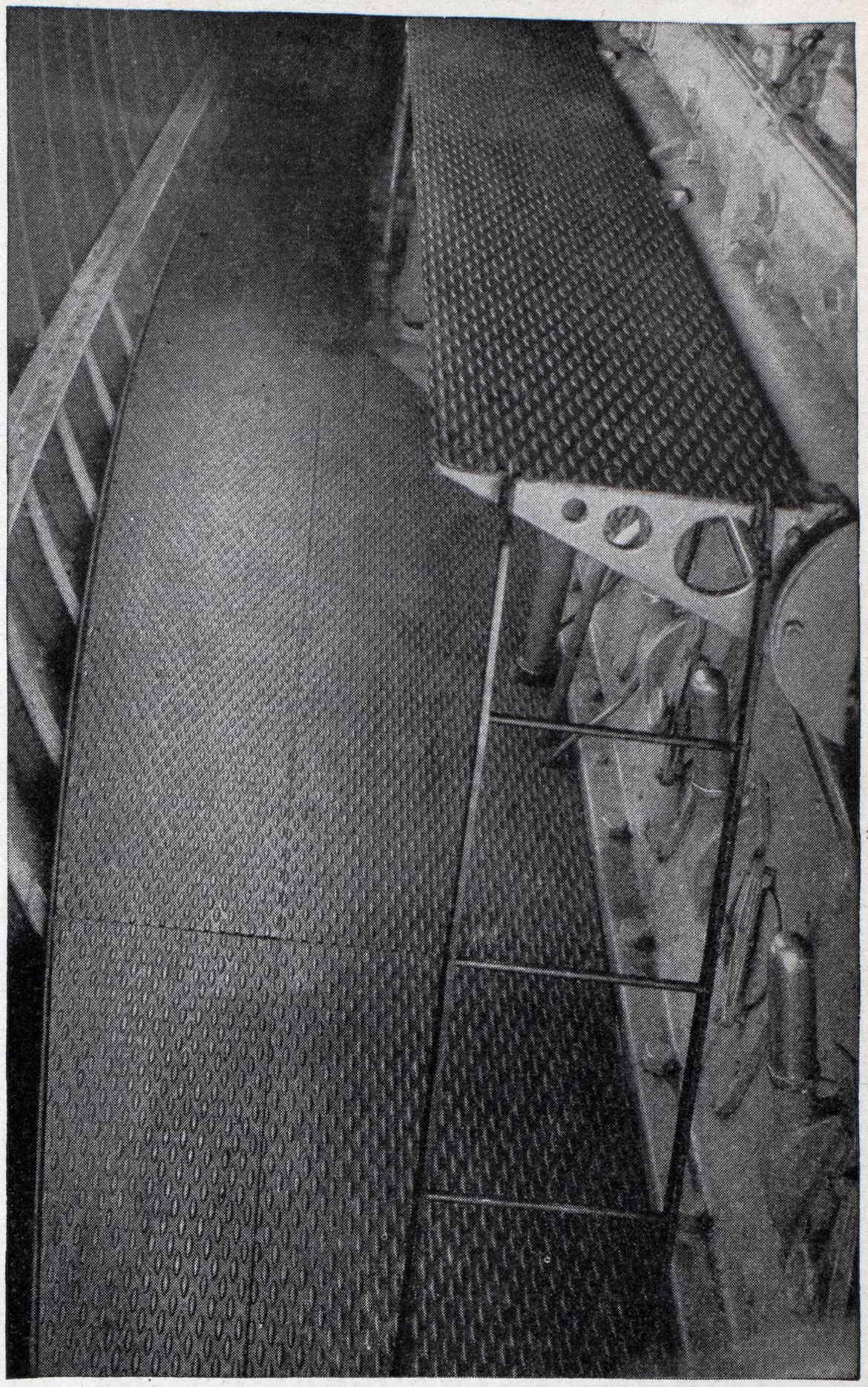
Brookline, Mass., U. S. A.

Agents for the Great Lakes,
The Upson-Walton Company, Cleveland, Ohio

Ship For Sale?

If you have a passenger ship, freighter, tanker, tug or any other floating property or marine equipment for sale advertise it in Marine Review.

The rate is $3.00 for a minimum advertisement of 30 words. Additional words, 10c each.



SAFE . . . in any weather!

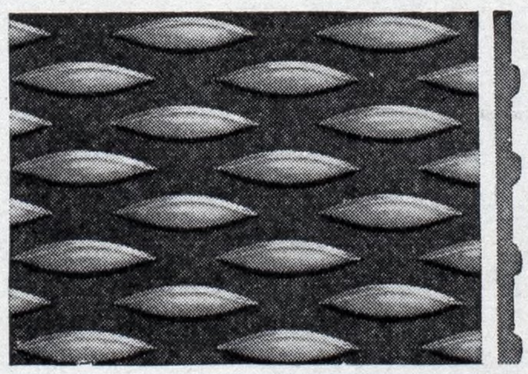
ENGINE room floors, platforms and runways are safe for the walker in every weather when they are made of "A. W." Diamond Pattern Rolled Steel Floor Plate.

The raised pattern of oval-shaped, bevel-edged and rounded-top diamonds gives the walker confidence and prevents side-slipping with the roll of the ship.

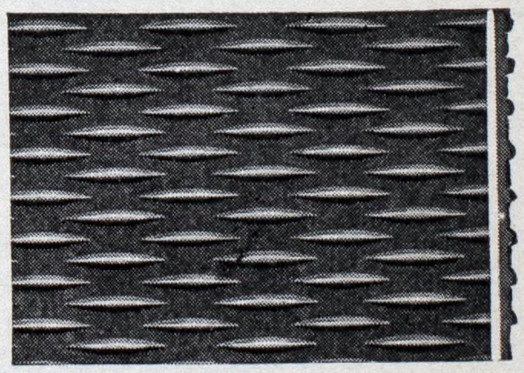
Because the tops of the diamonds are rounded (not flat), water and oil cannot remain on the raised pattern. Thorough drainage is provided from every angle.

"A. W." Floor Plate is made in two patterns, as illustrated below. It is rolled in thicknesses, widths and lengths to meet every need, and can be furnished in steel and all commercially-rolled metals. Write for samples and booklets.

"A.W." Diamond (¼ size)



"A.W." Diamondette (¼ size)

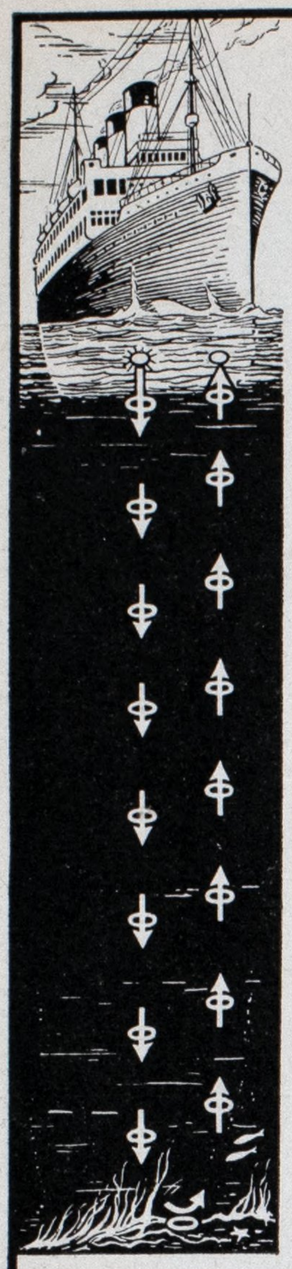


ALAN WOOD STEEL CO.

CONSHOHOCKEN, PA.

Philadelphia
New York
Boston Dallas

Seattle
San Francisco
Los Angeles



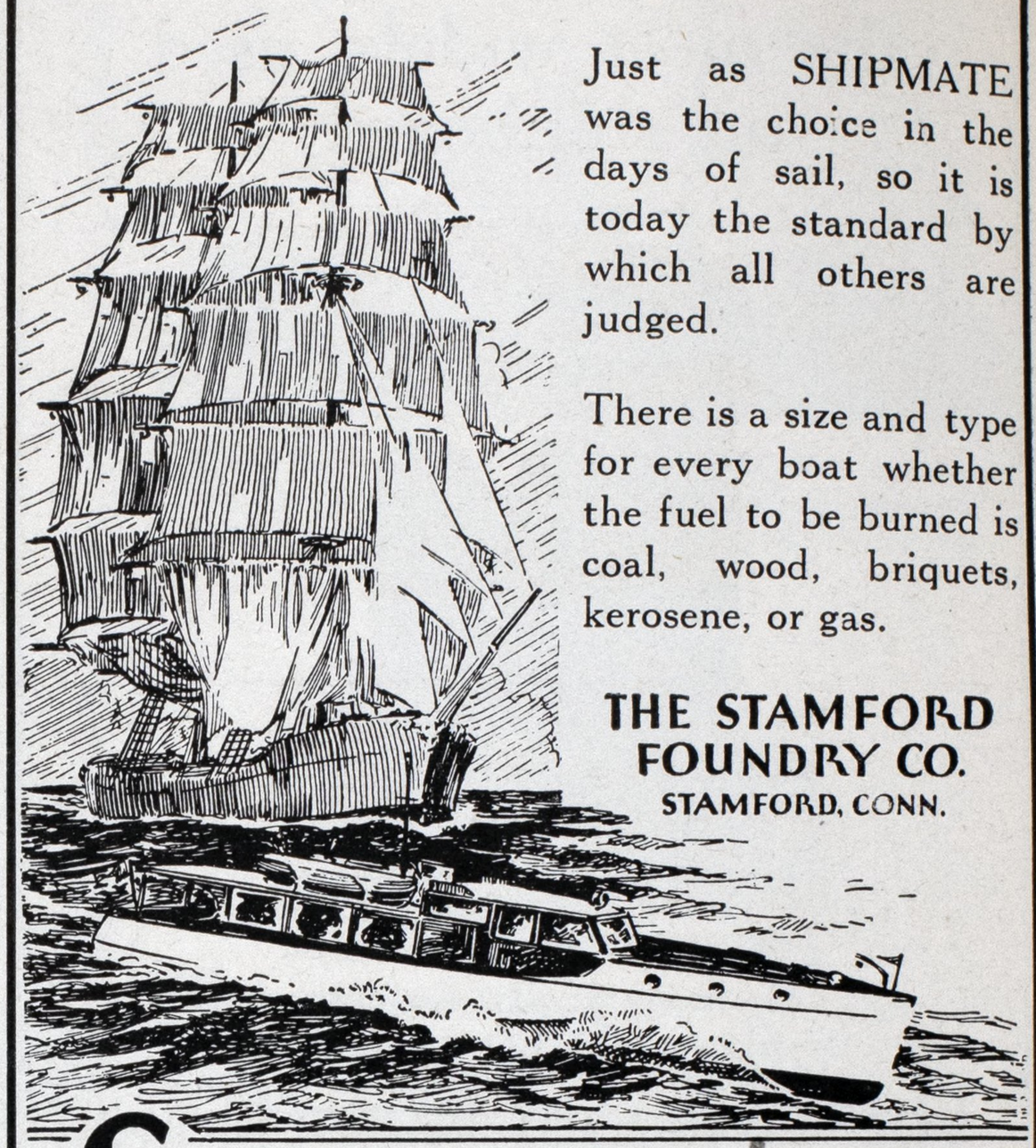
Fathometer
VISUAL ECHO SOUNDINGS

SAFETY at sea demands modern navigating equipment. The Fathometer gives instant knowledge of depth beneath the keel. A constant assurance of depth is of vital importance to safe navigation. Continuous soundings allow the Navigator to check his position regardless of weather, tides or varying currents. Fathometer equipment is now installed upon vessels of the—U.S. Lines, Cunard, North German Lloyd, United Fruit, Standard Shipping, Moore & McCormack, AGWI Lines and many others.

Submarine Signal Company
160 State Street :: Boston, Massachusetts :: U. S. A.

MANUFACTURERS OF
Fathometers *for* Echo Sounding
Oscillators *for* Submarine Signaling
Submarine Receivers *for* Direction Finding
Synchronous Signal Equipment *for* Distance Finding

1881 *to* 1930



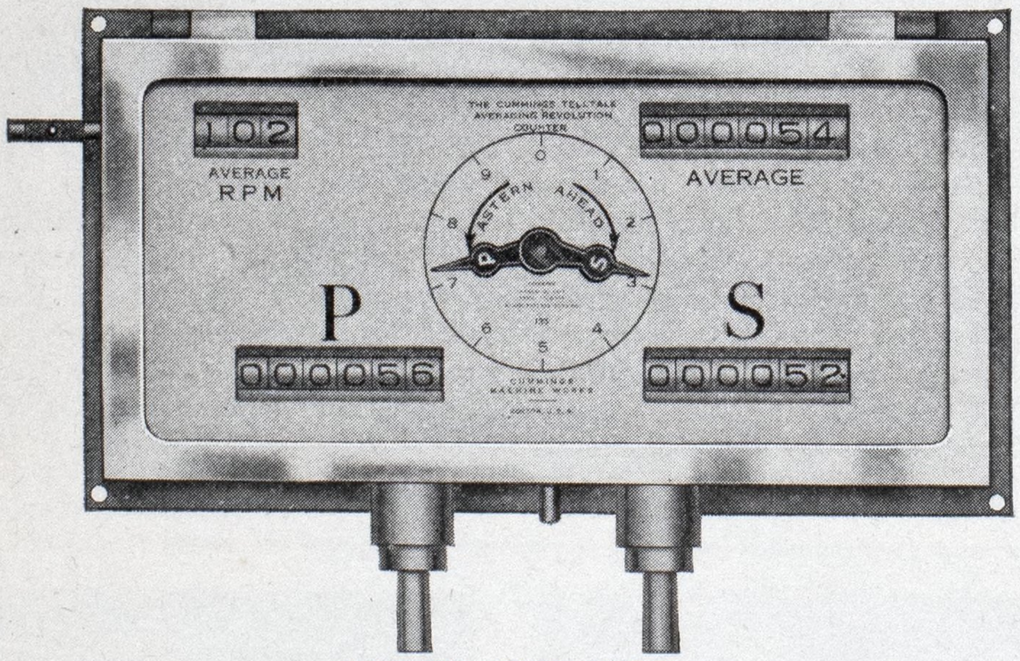
Just as SHIPMATE was the choice in the days of sail, so it is today the standard by which all others are judged.

There is a size and type for every boat whether the fuel to be burned is coal, wood, briquets, kerosene, or gas.

THE STAMFORD FOUNDRY CO.
STAMFORD, CONN.

SHIPMATES

CUMMINGS NEW TWO SHAFT TELLTALE AVERAGING COUNTER



ALL IN ONE CASE

15 SECONDS TO GET AVERAGE R P M

Total Revolutions for the Port and Starboard Shafts. The Two Hand Telltale shows at a glance the actual Performance of Each Shaft ahead and back and the proportionate speed of each.

TORSION METERS
For Both Solid and Hollow Shaft
Full particulars upon application

Cummings Machine Works
255 Atlantic Ave., Boston, Mass.

DEAN BROS.
MARINE PUMPS
"The Dean of Pumps on Land and Sea"

Single Style & Duplex
Piston Type & Plunger

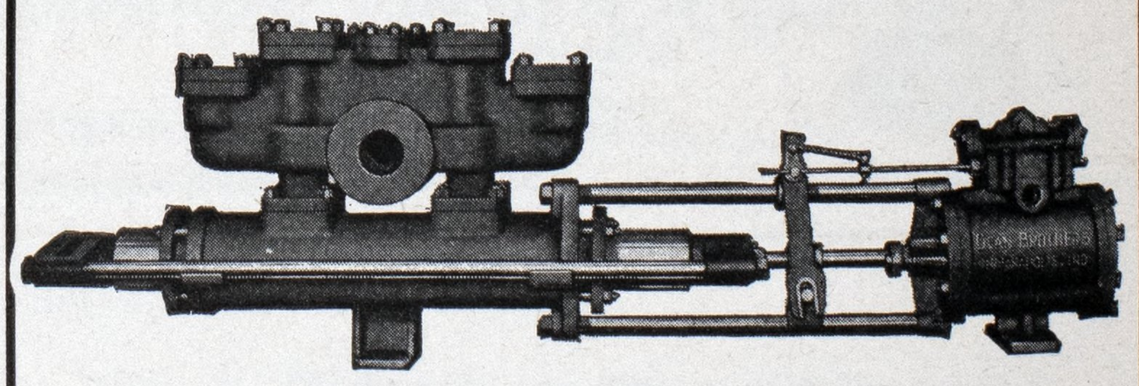
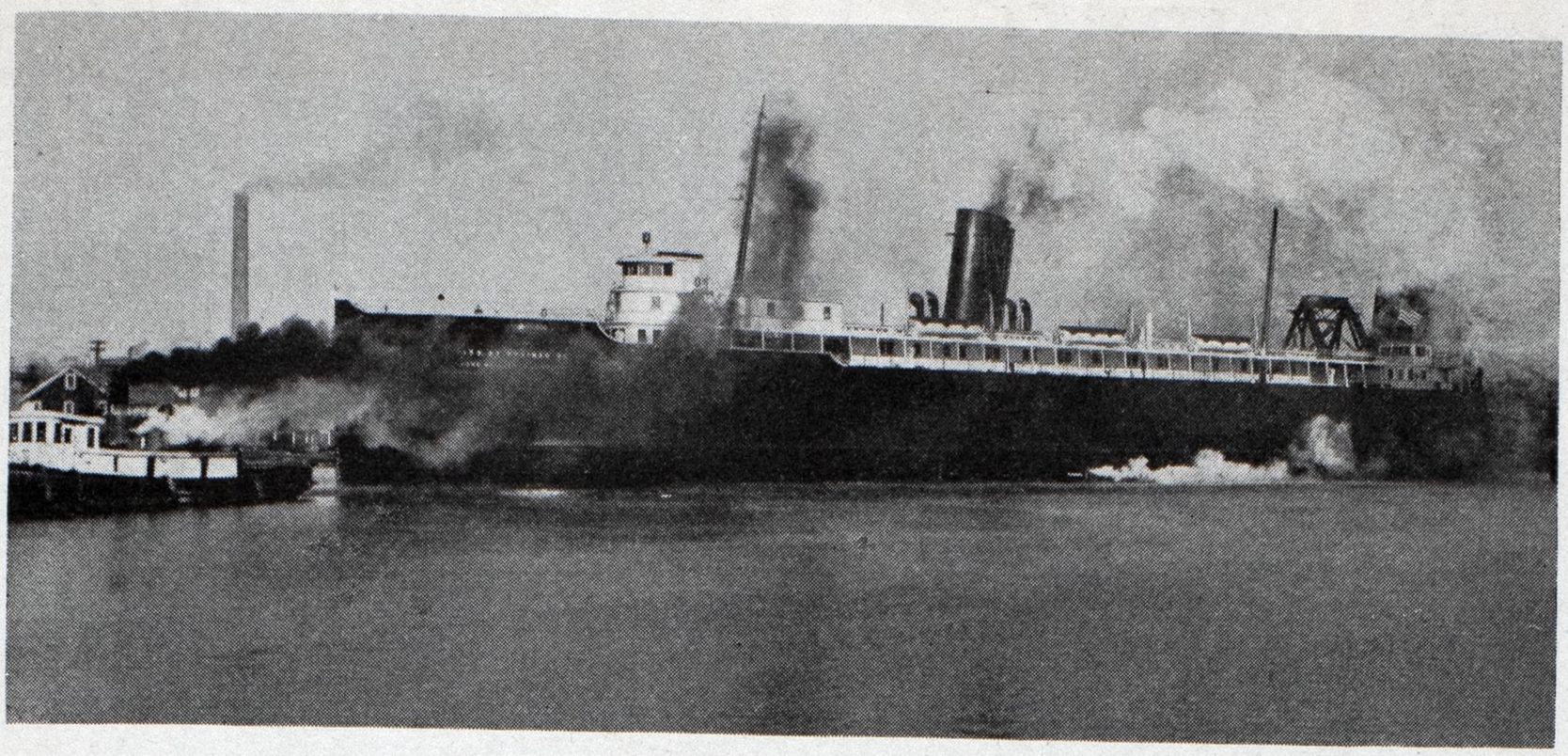


Figure No. 2311 Horizontal Single Style Double Acting Outside End Packed Plunger Trombone Pot Valve Pump For Boiler Feed & Pressure Service.

ESTABLISHED 1869
DEAN BROS. COMPANY
MANUFACTURERS OF PUMPING MACHINERY FOR ALL PURPOSES
323 WEST TENTH ST.
INDIANAPOLIS IND.



HERE IS THE CITY OF SAGINAW 31, the turbo electric drive carferry built by us for the Pere Marquette Railway Company. When it comes to designing and building vessels our engineering organization, skilled workmen, and modern facilities guarantee satisfaction to the customer.

We design and build steel passenger and freight vessels, carferries, oil tankers, sand suckers, lighters, dredges, yachts, fire boats, tugs, derricks, scows, marine engines and boilers. At this plant you will find excellent facilities, including a 600′ steel floating dry dock, for ship, engine and boiler repairs.

MANITOWOC SHIPBUILDING CORPORATION

MANITOWOC, WISCONSIN

LANE LIFEBOATS

WERE SUPPLIED TO THE

BYRD ANTARCTIC EXPEDITION

C. M. Lane Lifeboat Co., Inc.

Brooklyn, N. Y.

HAMBURG-AMERICAN LINE

PASSENGER SERVICES: New York to Cherbourg, Southampton and Hamburg. New York to Galway, Cobh (Queenstown), Cherbourg and Hamburg. North Pacific Ports to Hamburg, Bremen and Antwerp via Panama Canal.

PLEASURE CRUISES: Around the World, to the West Indies, Northern Wonderlands, Mediterranean.

FREIGHT SERVICES: New York to Hamburg (8 days), Boston, Philadelphia, Baltimore and Norfolk to Bremen and Hamburg,

North Pacific Ports direct to Hamburg, Bremen and Antwerp.

HAMBURG-AMERICAN LINE
39 Broadway **New York**

Baltimore City Office
310 E. Lombard St.
Plaza 1935

New York Office
No. 1 Broadway
Digby 2173

The Maryland Dry Dock Company

BALTIMORE, MD.

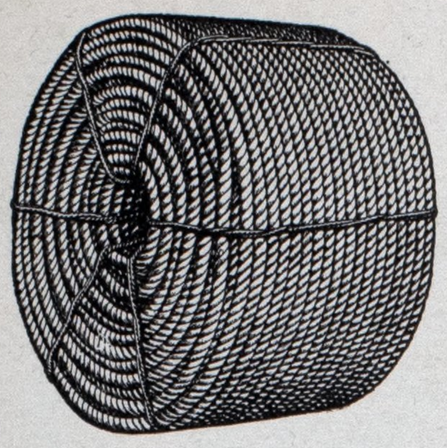
Drydocking, Shipbuilding and Ship Repairs of All Kinds

The Most Modern Shops in Baltimore **2—9000 Ton Floating Drydocks**

Floating Machine Shop

DAY and NIGHT SERVICE

Plant Phones: Curtis 0500 - 0501 - 0502 - 0503



WHITLOCK ROPE

is the choice of discriminating buyers of cordage for marine purposes—and for many other uses.

They appreciate the outstanding advantages of WATERFLEX lubrication and, in the larger sizes, of Whitlock FIBORE (fibre-core) Rope, with its superior strength and lasting qualities.

Let us explain in detail how to decrease your cordage expense.

WHITLOCK CORDAGE COMPANY

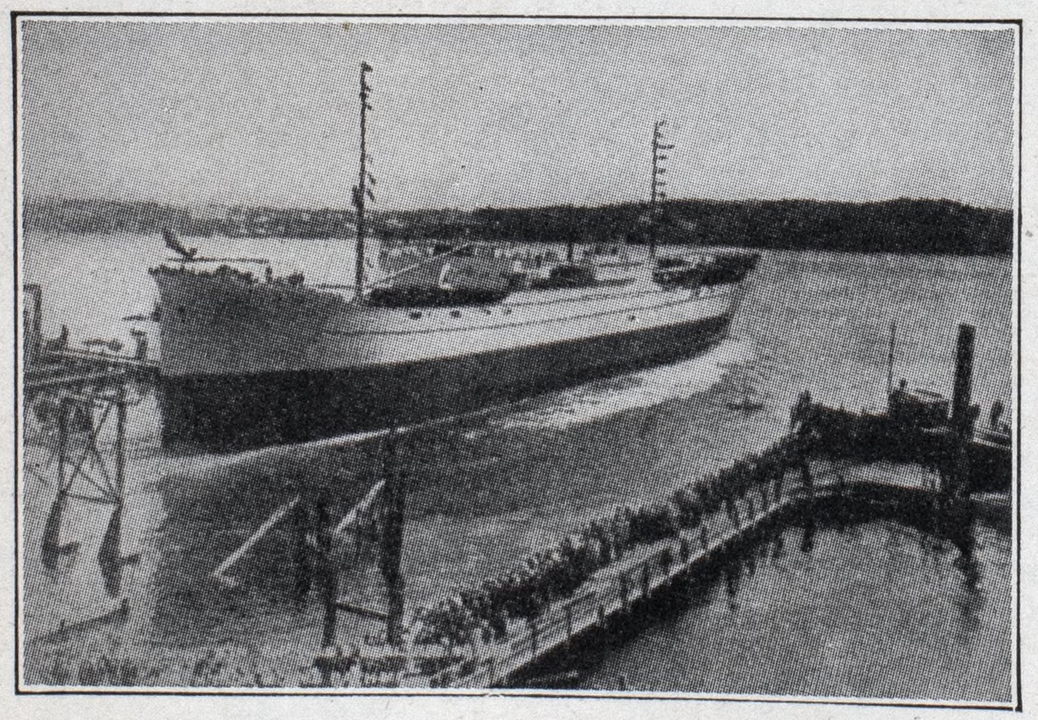
Factory and Warehouses
Jersey City, N. J.

46 South Street
New York

Branches
Chicago, Boston, Kansas City *and* Houston

BATH IRON WORKS

Launching 425 ft. steel Steamship

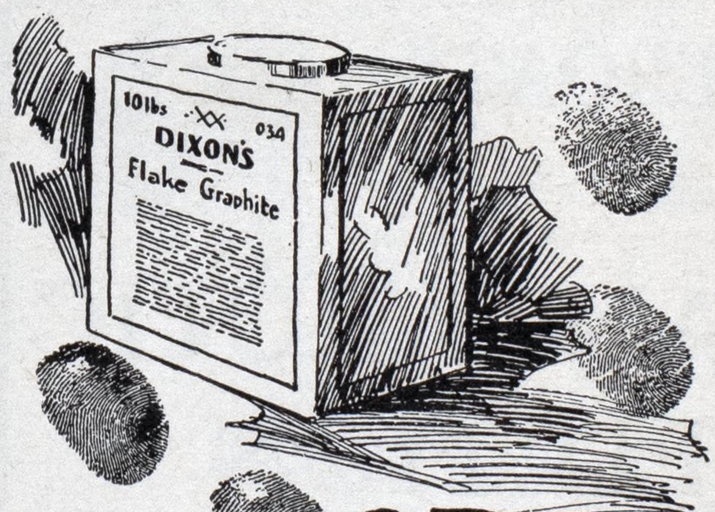


Years of experience in design and building water craft, have won for Bath Iron Works an enviable reputation. Sound materials straight thru, expert designing, conscientious workmanship—these are features of every vessel that leaves the docks of the Bath Iron Works.

Inquiries Solicited

BATH IRON WORKS CORP.

SHIPBUILDERS AND ENGINEERS
BATH, MAINE, U. S. A.



DIXON'S *fingerprints*

written in FLAKE GRAPHITE
for more than 100 years

This is the identifying mark of *Dixon's . . . Graphite.* The combination, *Dixon's* and *Graphite*, have been synonymous all over the world for more than 100 years.

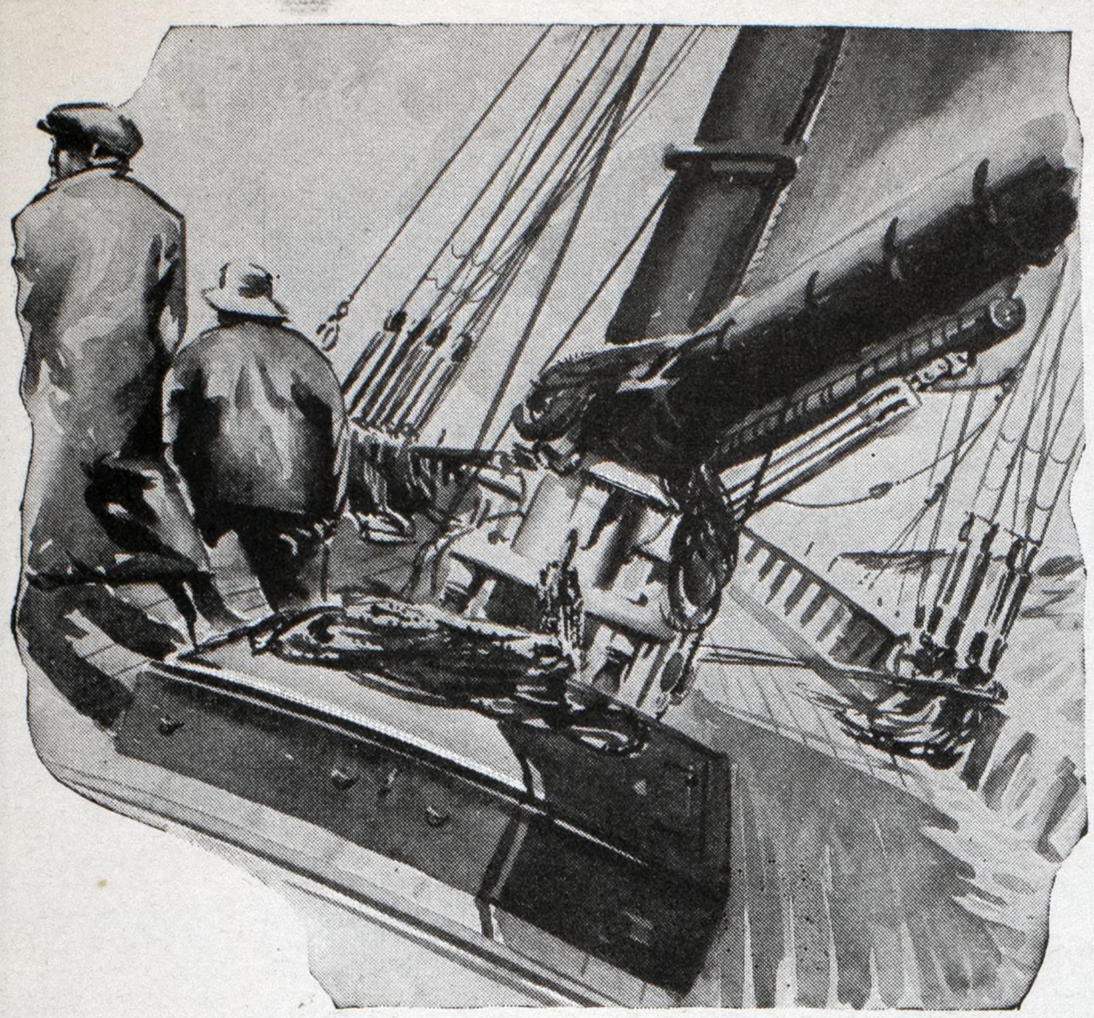
And, another word that is closely linked with these two is—*lubrication.* These three are inseparably linked in the minds of thousands of mechanics, maintenance men, and engineers, for unquestionably *Dixon's Flake Graphite* has its place in every well planned scheme of lubrication, and as an auxiliary lubricant with oils and greases it is generally recognized as benefiting the base lubricant.

If you have never had the *how*, *where* and *why* of Dixon's Flake Graphite lubrication explained to you, write for it today. Or, better still, send us an outline of your lubricating problems and we'll tell you how Dixon's can help you.

Joseph Dixon Crucible Company

Jersey City D X N TRADE MARK **New Jersey**

Established 1827



"Then Ho for the sea so damp and free"

Deep sea sailormen realize that in a well-caulked tight bottom lies not only the welfare of the vessel and the crew but the safe delivery of the cargo.

For a hundred years,

STRATFORD OAKUM

has been keeping the ocean out of the finest ships that sail. Sailors depend on Stratford Oakum because they know it is the best.

Stratford Oakum is most economical to use. Wastage is very small, less labor is required to spin and caulk and it "stays put," whether in deck, side or bottom.

Seams right-caulked with Stratford Oakum will stay tight longer than when any other material is used.

Be sure you get Stratford Oakum

George Stratford Oakum Company

Jersey City, New Jersey

Also Manufacturers of Cotton Wiping Waste *5

SAMSON SPOT

Log Lines

Trade Mark Reg. U.S. Pat. Off.

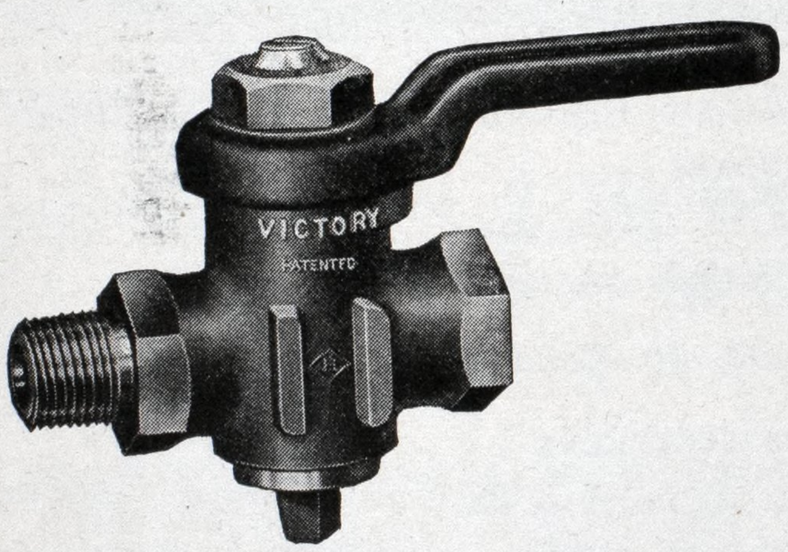
Smooth, tough and durable; no adulterating material to stiffen it and decrease strength and durability. Solid braided of extra quality cotton yarn. Uniform in size and quality. Easily identified by the colored spots, our trade mark.

We also manufacture flag halyards, lead lines, tiller rope; solid braided cotton cord in all sizes for various marine uses. Ask for catalog and samples.

SAMSON CORDAGE WORKS

89 BROAD STREET BOSTON, MASS.

TRADE MARK



VICTORY

LUBRICATED AIR COCKS

For Hard Service

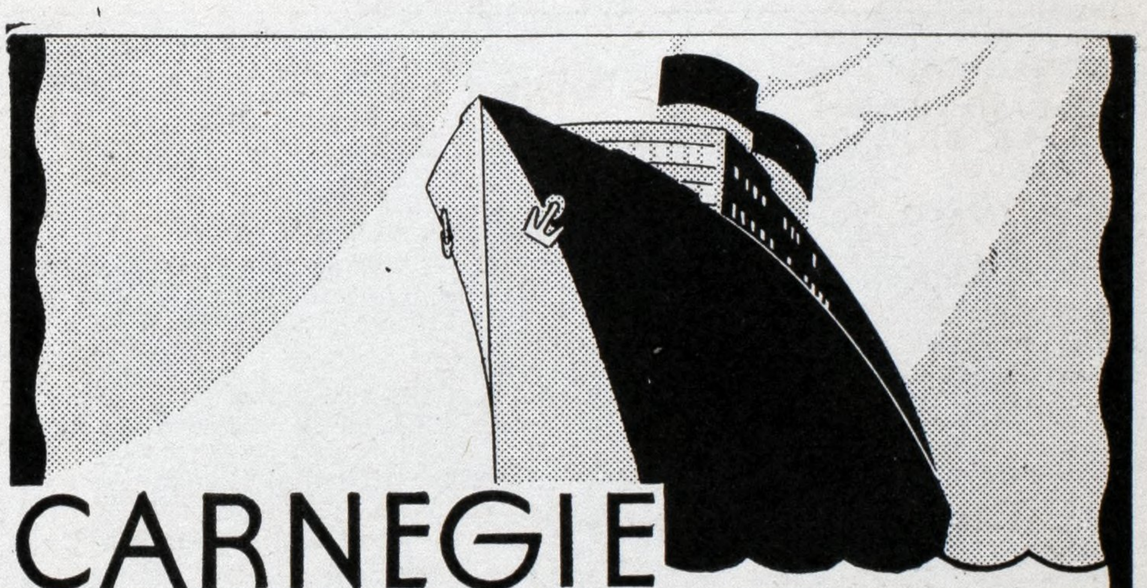
in

Shipyards and Foundries

Write for particulars

THE HAYDENVILLE CO.

Haydenville, Mass.



CARNEGIE SHIP BUILDING PRODUCTS

A complete line of structural steel sections for shipbuilding purposes, including Carnegie Beams with their wide, parallel flanges, shipbuilding channels and bulb angles, Carnegie Floor Plate in a raised pattern insuring long wear and easy cleaning, and rolled steel plates of every description.

The name "Carnegie" has been identified with steel manufacture for nearly three-quarters of a century—a good name to look for on Steel.

CARNEGIE STEEL COMPANY

Subsidiary of United States Steel Corporation

PITTSBURGH, PA. 62

"Where-To-Buy"

A classified-by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶ Index to advertisements will give you page number of any advertiser and by referring to advertisement you can get full particulars about products.

ACETYLENE (Dissolved)
Prestolite Co., The, Inc.,
30 E. 42nd St., New York City

AIR COMPRESSORS—See COMPRESSORS

AIR PREHEATERS
Babcock & Wilcox Co., The,
85 Liberty St., New York City.

ARGON
Linde Air Products Co., The,
30 E. 42nd St., New York City.

ARMOR (Submarine)
Morse, A. J., & Son, Inc.,
221 High St., Boston, Mass.

AVERAGING COUNTERS
Cummings Machine Works,
255 Atlantic Ave., Boston, Mass.

BABBITT METAL
Westinghouse Electric & Mfg. Co.,
S. Philadelphia, Pa.

BARGES (Steel)
American Bridge Co., 71 Broadway,
New York City.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway,
New York City.

BATTERIES
Electric Storage Battery Co., The,
19th and Allegheny Sts.,
Philadelphia.

BEARING (Rubber)
Goodrich, B. F., Rubber Co.,
Akron, O.

BEDS (Metal)
Simmons Co., The, 666 Lake Shore Drive, Chicago, Ill.

BINNACLES
Ritchie, E. S., & Sons,
Brookline, Mass.

BLOWERS (Flue)
American Shipbuilding Co.,
Foot of W. 54th St., Cleveland, O.

BLOWERS (Motor Driven Ventilation)
Sturtevant, B. F., Co.,
Hyde Park, Boston, Mass.

BLOWERS (Turbine Driven)
Westinghouse Elec. & Mfg. Co.,
S. Philadelphia, Pa.

BOATS (Steel and Wood)
Bethlehem Shipbuilding Corp., Ltd.,
Bethlehem, Pa.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway,
New York City.

BOILERS (Marine)
Almy Water Tube Boiler Co.,
184 Allen St., Providence, R. I.
American Shipbuilding Co.,
Foot of W. 54th St., Cleveland, O.
Babcock & Wilcox Co.,
85 Liberty St., New York City.
Bethlehem Shipbuilding Corp., Ltd.,
Bethlehem, Pa.
Great Lakes Engineering Works,
River Rouge, Mich.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway,
New York City.
Oldman-Magee Boiler Works, Inc.,
36-40 Illinois St., Buffalo, N. Y.
Sun Shipbuilding & Dry Dock Co.,
Chester, Pa.
Toledo Shipbuilding Co., Toledo, O.

BOILERS (Water Tube)
Almy Water Tube Boiler Co.,
184 Allen St., Providence, R. I.
Babcock & Wilcox Co., The,
85 Liberty St., New York City.

BOOKS (Technical)
Penton Publishing Co., Cleveland, O.

BRAKES (Electric)
Cutler-Hammer, Inc.,
1265 St. Paul Avenue,
Milwaukee, Wis.

BROKERS (Vessel)
Boland & Cornelius,
Marine Trust Bldg., Buffalo, N. Y.
Farley, Edward P., & Co., Inc.,
11 Broadway, New York City.

BUNKER FUEL OIL—See FUEL OIL

BURNERS (Oil)—See OIL BURNING EQUIPMENT

CABLES
Columbian Rope Co., Auburn, N. Y.
Whitlock Cordage Co.,
46 South St., New York City.

CALCIUM CARBIDE
Union Carbide Sales Co.,
30 E. 42nd St., New York City

CALKING COTTON
Stratford, Geo., Oakum Co.,
165 Cornelison Ave.,
Jersey City, N. J.

CAPSTANS
Bethlehem Shipbuilding Corp., Ltd.,
Bethlehem, Pa.
Dake Engine Co.,
Grand Haven, Mich.
Hyde Windlass Co., Bath, Me.

CAR FLOATS
American Bridge Co.,
71 Broadway, New York City.
Bethlehem Shipbuilding Corp., Ltd.,
Bethlehem, Pa.

CARBIC
Union Carbide Sales Co.,
30 E. 42nd St., New York City

CARBIC FLOODLIGHTS
Oxweld Acetylene Co., The,
30 E. 42nd St., New York City

CARBIDE
Union Carbide Sales Co.,
30 E. 42nd St., New York City

CASTINGS
Great Lakes Engineering Works,
River Rouge, Mich.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway,
New York City.
Standard Motor Construction Co.,
172 Whiton St.,
Jersey City, N. J.

CASTINGS (Iron)
Busch-Sulzer Bros.-Diesel Engine Co.,
2nd and Utah Sts., St. Louis, Mo.

COMBINATION COUNTER AND TELLTALE
Cummings Machine Works,
255 Atlantic Ave., Boston, Mass.

COMPASSES
Ritchie, E. S., & Sons,
Brookline, Mass.

COMPASSES (Gyro)
Sperry Gyroscope Co., The,
Brooklyn, N. Y.

COMPRESSORS
Brunswick-Kroeschell Co.,
New Brunswick, N. J.

CONDENSERS
Dean Brothers Co.,
323 W. 10th St., Indianapolis, Ind.
Great Lakes Engineering Works,
River Rouge, Mich.
Ingersoll-Rand Co.,
11 Broadway, New York City
Westinghouse Electric & Mfg. Co.,
So. Philadelphia, Pa.

CONTRAPROPELLER
Collingwood Shipyards, Inc.,
Collingwood, Ont., Canada.

CONTRARUDDER
Collingwood Shipyards, Inc.,
Collingwood, Ont., Canada.

CONTROLLERS (Electric)
Cutler-Hammer, Inc.,
1265 St. Paul Avenue,
Milwaukee, Wis.

CONVEYORS (Portable)
Clark Tructractor Co.,
Battle Creek, Mich.

CORDAGE
Columbian Rope Co., Auburn, N. Y.
Samson Cordage Works,
Boston, Mass.
Whitlock Cordage Co.,
46 South St., New York City.

CUTTING APPARATUS (Oxy-Acetylene, Oxy-Gas)
Oxweld Acetylene Co., The,
30 E. 42nd St., New York City

DAVITS
Welin Davit & Boat Corp.,
3-5 Vernon Ave.,
Long Island City, N. Y.

DECKING COVERING
Selby, Battersby & Co.,
33rd & Arch Sts., Philadelphia.

DEPTH FINDERS
Submarine Signal Co.,
160 State St., Boston, Mass.

DIESEL ENGINES—See ENGINES (Diesel)

DIESEL FUEL OIL—See FUEL OIL

DISSOLVED ACETYLENE
Prestolite Co., The, Inc.,
30 E. 42nd St., New York City

DISTILLING APPARATUS
Griscom-Russell Co.,
285 Madison Ave., New York City.

DIVING APPARATUS
Morse, Andrew J., & Son, Inc.,
221 High St., Boston, Mass.

DRAFT (Artificial and Mechanical for Boilers)
American Shipbuilding Co.,
Foot of W. 54th St., Cleveland.
Great Lakes Engineering Works,
River Rouge, Mich.
Sturtevant, B. F., Co.,
Hyde Park, Boston, Mass.

DREDGING MACHINERY
Great Lakes Engineering Works,
River Rouge, Mich.
Westinghouse Electric & Mfg. Co.,
S. Philadelphia, Pa.

DRINKING FOUNTAINS
Haydenville Co., The,
Haydenville, Mass.

DRY DOCKS
American Shipbuilding Co.,
Foot of W. 54th St., Cleveland.
Bethlehem Shipbuilding Corp., Ltd.,
Bethlehem, Pa.
Great Lakes Engineering Works,
River Rouge, Mich.
Manitowoc Ship Building Corp.,
Manitowoc, Wis.
Maryland Dry Dock Co.,
Baltimore, Md.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway,
New York City.
New York Shipbuilding Co.,
Camden, N. J.
Sun Shipbuilding & Dry Dock Co.,
Chester, Pa.
Todd Shipyards Corp.,
25 Broadway, New York City.
Toledo Shipbuilding Co., Toledo, O.

DYNAMOS
Westinghouse Electric & Mfg. Co.,
So. Philadelphia, Pa.

ECONOMIZERS
Babcock & Wilcox Co., The,
85 Liberty St., New York City.

EJECTORS (Ash)
Great Lakes Engineering Works,
River Rouge, Mich.
Westinghouse Electric & Mfg. Co.,
So. Philadelphia, Pa.

ENGINE SPEED INDICATORS
Sperry Gyroscope Co., The,
Brooklyn, N. Y.

ENGINEERS (Marine, Mechanical and Consulting)
Canada Steamship Co.,
P. O. Box 2430, Montreal, Can.
Great Lakes Engineering Works,
River Rouge, Mich.
Todd Shipyards Corp.,
25 Broadway, New York City.
United Dry Docks, Inc.,
11 Broadway, New York City.

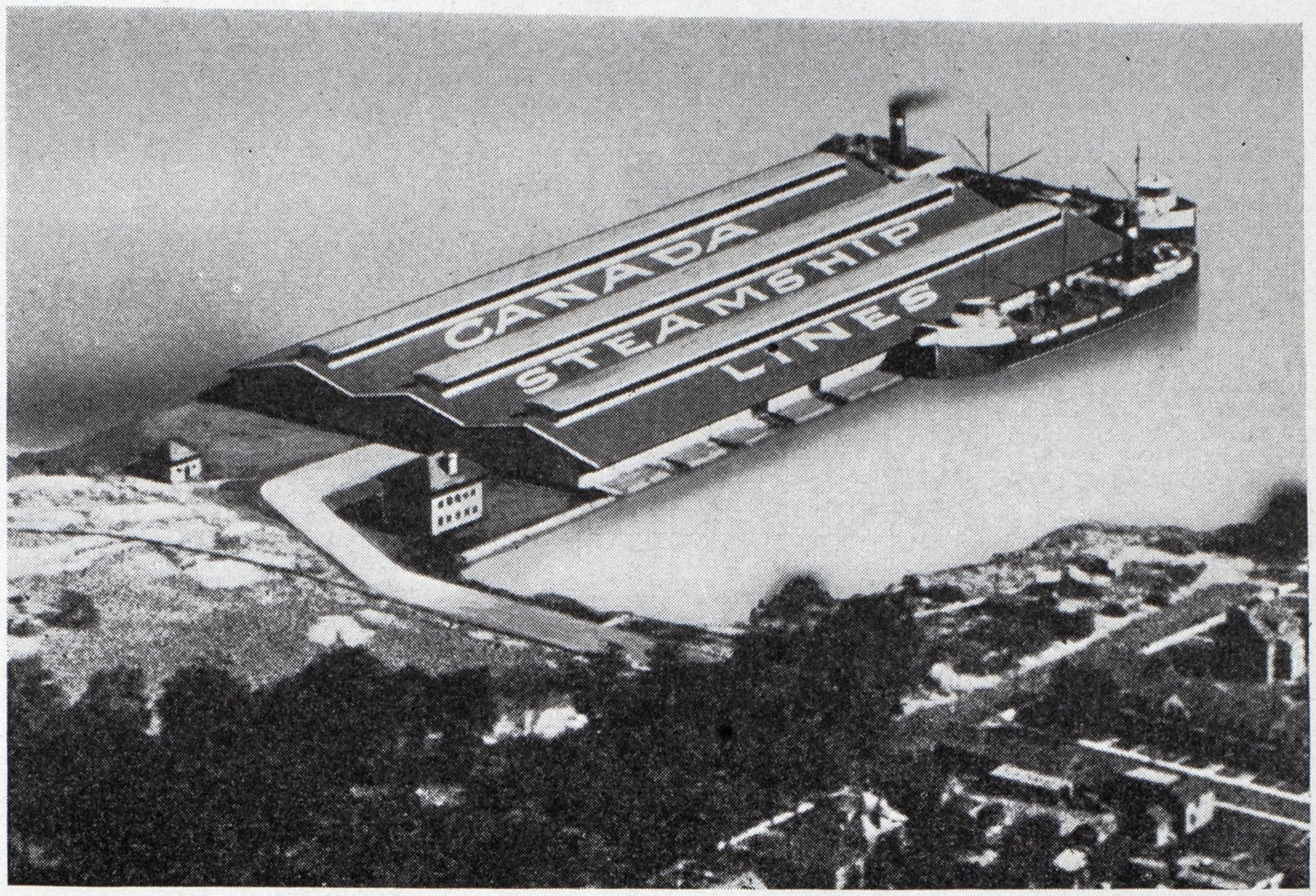
ENGINES
Busch-Sulzer Bros.-Diesel Engine Co.,
2nd and Utah Sts., St. Louis, Mo.
Cooper-Bessemer Corp., The,
Grove City, Pa.
Electric Boat Co.-New London Ship & Engine Works, 247 Park Ave.,
New York City.
Fairbanks, Morse & Co.,
900 S. Wabash Ave., Chicago, Ill.
Standard Motor Construction Co.,
172 Whiton St.,
Jersey City, N. J.
Sun Shipbuilding & Dry Dock Co.,
Chester, Pa.

ENGINES (Diesel)
Busch-Sulzer Bros.-Diesel Engine Co.,
2nd and Utah Sts., St. Louis, Mo.
Cooper-Bessemer Corp., The,
Grove City, Pa.
Electric Boat Co.-New London Ship & Engine Works, 247 Park Ave.,
New York City.
Fairbanks, Morse & Co.,
900 S. Wabash Ave., Chicago, Ill.
Ingersoll-Rand Co.,
11 Broadway, New York City
Standard Motor Construction Co.,
172 Whiton St.,
Jersey City, N. J.
Sun Shipbuilding & Dry Dock Co.,
Chester, Pa.

ENGINES (Internal Combustion)
Busch-Sulzer Bros.-Diesel Engine Co.,
2nd and Utah Sts., St. Louis, Mo.
Cooper-Bessemer Corp., The,
Grove City, Pa.
Fairbanks, Morse & Co.,
900 S. Wabash Ave., Chicago, Ill.
Standard Motor Construction Co.,
172 Whiton St., Jersey City, N. J.

At Hamilton, Ontario

a new terminal for package freight has been opened by

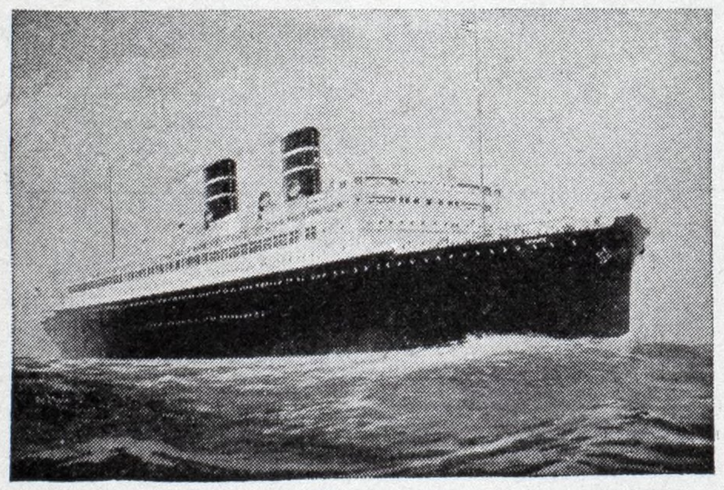


CANADA STEAMSHIP LINES

"The Standard for All Marine Installations"

B-K REFRIGERATION

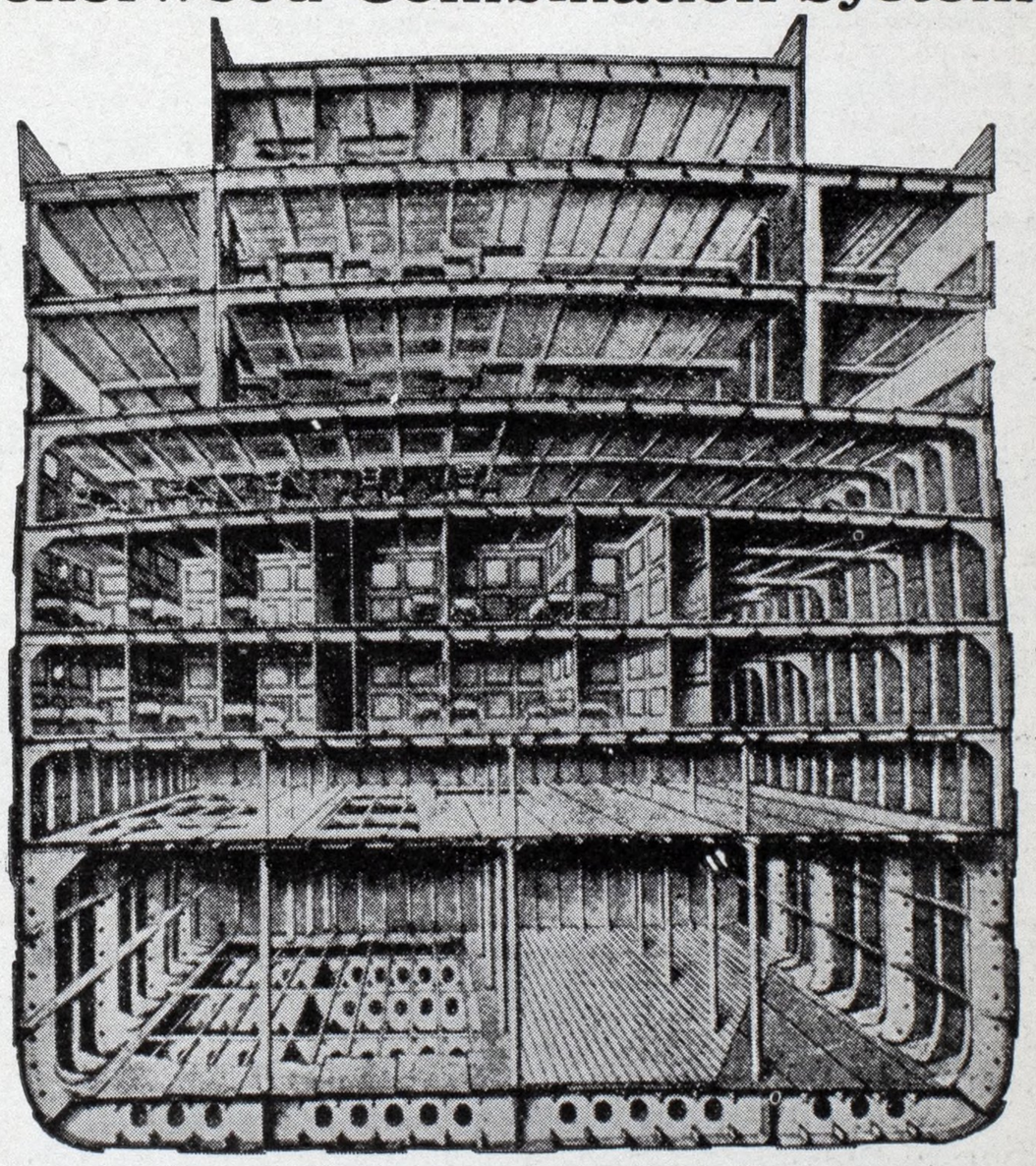
BRUNSWICK-KROESCHELL REFRIGERATION



for the ORIENTE and MORRO CASTLE

BRUNSWICK-KROESCHELL COMPANY
ENGINEERS and MANUFACTURERS
REFRIGERATING and ICE MAKING MACHINERY
NEW BRUNSWICK, N. J. - - - CHICAGO, ILL.
Branches, Distributors and Service in Principal Ports

Isherwood Combination System



Sectional View of Interior of Passenger Liner designed on the Isherwood Combination System
(*In a vessel of this type, deep transverses are recommended for hold construction, but are not essential.*)
Adaptable to any type but particularly advantageous for passenger liners.

Shipowners are advised to specify that plans and structural arrangements should be approved by

SIR JOSEPH W. ISHERWOOD & CO., Ltd.
17 BATTERY PLACE, NEW YORK
and 4, LLOYD'S AVENUE, LONDON, E. C. 3

2

ENGINES (Marine)
American Shipbuilding Co.,
Foot of W. 54th St., Cleveland.
Bethlehem Shipbuilding Corp.,
Bethlehem, Pa.
Busch-Sulzer Bros.-Diesel Engine Co.,
2nd and Utah Sts., St. Louis, Mo.
Canada Steamship Lines,
P. O. Box 2430, Montreal, Can.
Cooper-Bessemer Corp., The,
Grove City, Pa.
Electric Boat Co.-New London Ship & Engine Works, 247 Park Ave.,
New York City.
Fairbanks, Morse & Co.,
900 S. Wabash Ave., Chicago, Ill.
Ingersoll-Rand Co.,
11 Broadway, New York City.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway,
New York City.
New York Shipbuilding Co.,
Camden, N. J.
Sturtevant, B. F., Co., Inc.,
Hyde Park, Boston, Mass.
Sun Shipbuilding & Dry Dock Co.,
Chester, Pa.
Todd Shipyards Corp.,
25 Broadway, New York City
Toledo Shipbuilding Co., Toledo, O.
United Dry Docks, Inc.,
11 Broadway, New York City.

ENGINES (Oil)
Busch-Sulzer Bros.-Diesel Engine Co., 2nd and Utah Sts.,
St. Louis, Mo.
Cooper-Bessemer Corp., The,
Grove City, Pa.
Electric Boat Co.-New London Ship & Engine Works, 247 Park Ave.,
New York City.
Fairbanks, Morse & Co.,
900 S. Wabash Ave., Chicago, Ill.
Ingersoll-Rand Co.,
11Broadway, New York City.
Standard Motor Construction Co.,
172 Whiton St.,
Jersey City, N. J.
Sun Shipbuilding & Dry Dock Co.,
Chester, Pa.

ENGINES (Steam, Steering)
Dake Engine Co..
Grand Haven, Mich.

EUROPEAN STEAMSHIP LINES (Passenger and Freight)
Hamburg-American Line
39 Broadway, New York City.

EVAPORATORS
Griscom-Russell Co.,
285 Madison Ave., New York City.

FANS (Electric)
General Electric Co.,
Schenectady, N. Y.
Sturtevant, B. F., Co.,
Hyde Park, Boston, Mass.
Westinghouse Electric & Mfg. Co.,
S. Philadelphia, Pa.

FEED WATER HEATERS—See HEATERS AND PURIFIERS (Feed Water)

FEED WATER REGULATORS
Babcock & Wilcox Co.,
85 Liberty St., New York City.

FIRE BRICK
Babcock & Wilcox Co., The,
85 Liberty St., New York City.

FLOODLIGHTS (Acetylene)
Oxweld Acetylene Co., The,
30 E. 42nd St., New York City.

FLOORING
Selby, Battersby & Co.,
33rd & Arch Sts., Philadelphia.

FLOOR PLATES
Carnegie Steel Co.,
Carnegie Bldg., Pittsburgh, Pa.

FOUNDERS
American Shipbuilding Co.,
Foot of W. 54th St., Cleveland, O.
New York Shipbuilding Co.,
Camden, N. J.

FREIGHT SERVICE
Hamburg-American Line,
39 Broadway, New York City.

FUEL OIL
Standard Oil Co. of New Jersey,
26 Broadway, New York City.
Vacuum Oil Co.,
61 Broadway, New York City.

FURNITURE
Marble & Shattuck Chair Co.,
10200 Foster Ave., Cleveland, O.

FURNITURE (Metal)
Simmons Co., The, 666 Lake Shore Drive, Chicago, Ill.

GALLEY RANGES
Stamford Foundry Co.,
Stamford, Conn.

GEARS (Marine Equipment)
General Electric Co.,
Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.,
So. Philadelphia, Pa.

GENERATING SETS
Fairbanks, Morse & Co.,
900 S. Wabash Ave., Chicago, Ill.

GENERATING SETS (Direct Connected)
General Electric Co.,
Schenectady, N. Y.
Sturtevant, B. F., Co.,
Hyde Park, Boston, Mass.
Westinghouse Electric & Mfg. Co.,
So. Philadelphia, Pa.

GENERATORS
Fairbanks, Morse & Co.,
900 S. Wabash Ave., Chicago, Ill.
Westinghouse Electric & Mfg. Co.,
S. Philadelphia, Pa.

GRAPHITE
Dixon, Jos., Crucible Co.,
Jersey City, N. J.

GRAPHITE GREASES
Dixon, Jos., Crucible Co.,
Jersey City, N. J.

GRAPHITE PAINT
Dixon, Jos., Crucible Co.,
Jersey City, N. J.

GRAPHITE PIPE JOINT COMPOUNDS
Dixon, Jos., Crucible Co.,
Jersey City, N. J.

GREASE
Vacuum Oil Co.,
61 Broadway, New York City.

GREASE (Launching)
Vacuum Oil Co.,
61 Broadway, New York City

GYPSEYS
American Engineering Co.,
Cumberland & Arimingo Sts.,
Philadelphia, Pa.

GYRO-PILOT (Automatic Steering)
Sperry Gyroscope Co., The,
Brooklyn, N. Y.

HATCH FASTENERS
Mullholland Hatch-Fastener Co.,
Marion Bldg., Cleveland, O.

HAWSERS (Manila)
Columbian Rope Co., Auburn, N. Y.
Samson Cordage Works, Boston.
Whitlock Cordage Co.,
46 South St., New York City.

HEATERS AND PURIFIERS (Feed Water)
Davis Engineering Co.,
90 West St., New York City.
Griscom-Russell Co.,
285 Madison Ave., New York City.
Westinghouse Electric & Mfg. Co.,
So. Philadelphia, Pa.

HEATING EQUIPMENT
Sturtevant, B. F., Co.,
Hyde Park, Boston, Mass.
Westinghouse Electric & Mfg. Co.,
S. Philadelphia, Pa.

HEATING STOVES
Stamford Foundry Co.,
Stamford, Conn.

HOISTING ENGINES
Hyde Windlass Co., Bath, Me.

HOISTS (Air)
American Shipbuilding Co.,
Foot of W. 54th St., Cleveland.
Ingersoll-Rand Co.,
11 Broadway, New York City

INDICATORS (Direction & Revolution)
Sperry Gyroscope Co., The,
Brooklyn, N. Y.

INDICATORS (Helm Angle)
Sperry Gyroscope Co., The,
Brooklyn, N. Y.

INDICATORS (Speed)
Sperry Gyroscope Co., The,
Brooklyn, N. Y.

ICE MACHINES—See REFRIGERATING MACHINERY

INSURANCE (Marine)
Boland & Cornelius.
Marine Trust Bldg., Buffalo, N. Y.

LAMPS (Mazda and Arc)
General Electric Co.,
Schenectady, N. Y.

LIFEBOATS
Lane, C. M., Lifeboat Co., Inc.,
856 Humboldt St., Brooklyn, N. Y.
Welin Davit & Boat Corp.,
3-5 Vernon Ave.,
Long Island City, N. Y.

LIFESAVING EQUIPMENT
Lane, C. M., Lifeboat Co., Inc.,
856 Humboldt St., Brooklyn, N. Y.

LIGHTING EQUIPMENT
Westinghouse Electric & Mfg. Co.
S. Philadelphia, Pa.

LUBRICATING OIL
Standard Oil Co., of New Jersey,
26 Broadway, New York City.
Vacuum Oil Co.,
61 Broadway, New York City.

MACHINERY (Marine)
American Shipbuilding Co.,
Foot of W. 54th St., Cleveland, O.
Bethlehem Shipbuilding Corp., Ltd.,
Bethlehem, Pa.
Cooper-Bessemer Corp., The,
Grove City, Pa.
Great Lakes Engineering Works.
River Rouge, Mich.
Manitowoc Ship Building Corp.,
Manitowoc, Wis.
Maryland Dry Dock Co.,
Baltimore Md.
Toledo Shipbuilding Co., Toledo, O.

MACHINES (Sounding)
Submarine Signal Co.,
160 State St., Boston, Mass.

MACHINISTS
American Shipbuilding Co.,
Foot of W. 54th St., Cleveland, O.
Busch-Sulzer Bros.-Diesel Engine Co., 2nd & Utah Sts.,
St. Louis, Mo.
New York Shipbuilding Co.,
Camden, N. J.

MAGNETS (Lifting)
Cutler-Hammer, Inc.,
1265 St. Paul Avenue,
Milwaukee, Wis.

MANILA OAKUM—See OAKUM (Marine, Rope, Packings, Plumbers)

MATERIAL HANDLING EQUIPMENT
Smith, Leathem D., Dock Co.,
Sturgeon Bay, Wis.

MATTRESSES
Simmons Co., The, 666 Lake Shore Drive, Chicago, Ill.

METERS (Gas & Air)
Cutler-Hammer, Inc.,
1265 St. Paul Avenue,
Milwaukee, Wis.

MOTOR GENERATOR SETS
Fairbanks, Morse & Co.,
900 S. Wabash Ave., Chicago, Ill.
General Electric Co.,
Schenectady, N. Y.
Troy Engine & Machine Co.,
Troy, Pa.
Westinghouse Electric & Mfg. Co.,
S. Philadelphia, Pa.

MOTORS (Electric)
Fairbanks, Morse & Co.,
900 S. Wabash Ave., Chicago, Ill.
General Electric Co.,
Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.,
East Pittsburgh, Pa.

NAUTICAL INSTRUMENTS
Ritchie, E. S., & Sons,
Brookline, Mass.
Sperry Gyroscope Co., The,
Brooklyn, N. Y.

NAVIGATING INSTRUMENTS
White, Kelvin & Wilfrid O., Co.,
112 State St., Boston, Mass.

NEON
Linde Air Products Co., The,
30 E. 42nd St., New York City.

NITROGEN
Linde Air Products Co.,
30 East 42nd St., New York City

OAKUM (Marine, Rope, Packings, Plumbers)
Stratford, George, Oakum Co.,
165 Cornelison Ave.,
Jersey City, N. J.

OIL BURNING EQUIPMENT
Babcock & Wilcox Co.,
85 Liberty St., New York City.
Bethlehem Shipbuilding Corp., Ltd.,
Bethlehem, Pa.
Coen Co., Inc., 610 S. Broadway,
Los Angeles, Cal.
Sturtevant, B. F., Co.,
Hyde Park, Boston, Mass.

OIL FOR ALL PURPOSES (Marine)
Vacuum Oil Co., 61 Broadway,
New York City.

OXY-ACETYLENE APPARATUS
Oxweld Acetylene Co., The,
30 E. 42nd St., New York City

OXYGEN
Linde Air Products Co.,
30 East 42nd St., New York City.

PASSENGER SERVICE
Hamburg-American Line,
39 Broadway, New York City.

PLATES (Sheared Steel)
Alan Wood Steel Co.,
Conshohocken, Pa.

PLATES (Steel Floor)
Alan Wood Steel Co.,
Conshohocken, Pa.

POWDERED COAL BURNERS
Coen Co., Inc., 610 S. Broadway,
Los Angeles, Cal.

PROPELLER BLADES AND HUBS
Sheriffs Mfg. Co., Milwaukee, Wis.

PROPELLER WHEELS
American Shipbuilding Co.,
Foot of W. 54th St., Cleveland, O.
Great Lakes Engineering Works,
River Rouge, Mich.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway,
New York City.
Sheriffs Mfg. Co., Milwaukee, Wis.
Toledo Shipbuilding Co., Toledo, O.

PROPELLERS
Bethlehem Shipbuilding Corp., Ltd.,
Bethlehem, Pa.
Hyde Windlass Co., Bath, Me.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway,
New York City.

PULVERIZED COAL BURNERS
Fuller-Lehigh Co.,
Fullerton, Pa.
Todd Shipyards Corp.,
25 Broadway, New York City.

PULVERIZED COAL SYSTEMS
Fuller-Lehigh Co.,
Fullerton, Pa.
Todd Shipyards Corp.,
25 Broadway, New York City.

PUMPS
Dean Brothers Co.,
323 W. 10th St., Indianapolis, Ind.
Fairbanks, Morse & Co.,
900 S. Wabash Ave., Chicago, Ill.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

On Board the . . .

On board the new Ward Liner, "Morro Castle" . . . on board the new Grace Liner, "Santa Clara" . . . on board the new American-South African Liner, "City of New York" . . . on board the new Coast Guard Cutters, "Itaska", "Sebago", "Saranac".

In fact, on board most all of the outstanding new ships—and the older ones—you will find Paracoil equipment holding responsible positions.

Paracoil Feed Water Heaters, Evaporators, Distillers, Lubricating Oil Coolers, etc., etc., have been standard marine equipment for many years.

Write for bulletins.

DAVIS ENGINEERING CORP.

90 West St. New York City

Wallene Engineering Co.

1740 E. 12th St. Cleveland, O.

THE PARACOIL PARADE

Leviathan
Virginia
California
Pennsylvania
Waialeale
Hualalai
Montauk
Montana
Caracas
George Washington
President Harding
Pacific Sun
President Fillmore
Hendrik Hudson
Alexander Hamilton
President Garfield
Morro Castle
Santa Clara
City of New York
Itaska
Sebago
Saranac
etc., etc., etc.

Star Brass Mfg. Co.

53 Oliver Street -::- Boston, Mass.

MANUFACTURERS OF

Accurate "Non-corrosive" Pressure and Recording Gauges, Revolution Counters, Marine Clocks.

Dead Weight Gage Testers.

Marine, Safety and Relief Valves for all pressures.

Marine Whistles and Sirens.

Extra Heavy Renewable Globe, Angle and Check Valves.

Star Outside Spring Steam Engine Indicators.

HIGH GRADE THROUGHOUT
SPECIFY AND ORDER THE BEST.

Branches: CHICAGO PITTSBURGH NEW YORK

PLAN NOW

The marine industry is of tremendous importance as a market for your products and service.

Marine Review can assist you in securing better sales returns. It is subscribed for by more steamship executives and ship operating officers than any other marine publication. Further, Marine Review gives you complete coverage of the shipyards as virtually every one of them subscribe for one or more copies.

Be sure to include Marine Review in your sales and advertising plans to reach the really important men who say yes, and O. K. requisitions in the marine trade.

50 TIMES AROUND THE WORLD

1,040,726 miles, or equal to nearly 50 times around the Earth at the equator, have been covered since 1921 by the S. S. "MUNARGO," owned by the Munson Steamship Line, and operated mainly on the New York-Nassau-Havana-Miami route. This vessel is equipped with

DE LAVAL DOUBLE REDUCTION GEARS

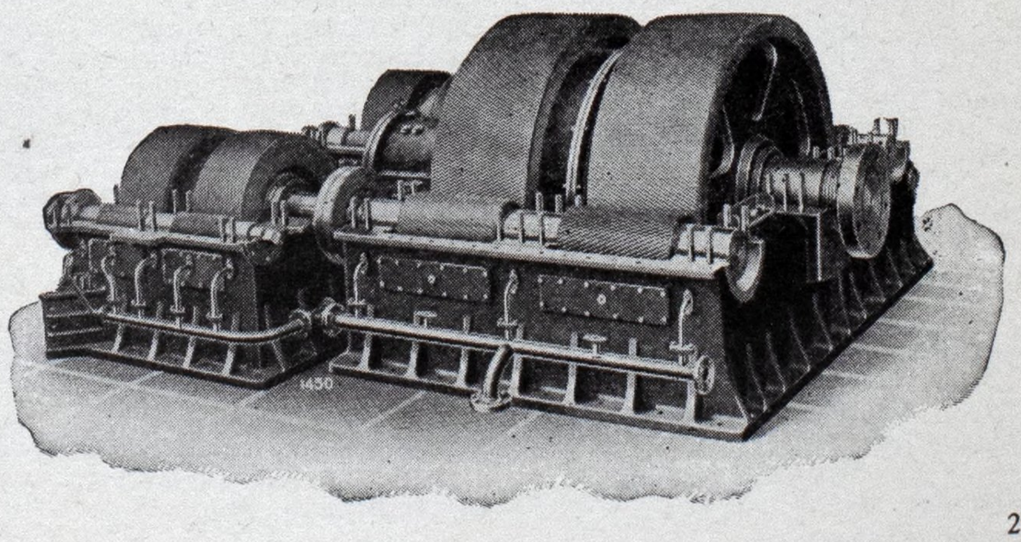
There have been no difficulties of any kind, not even the replacement of a single bearing. An inspection recently made, after more than eight years of service, shows the gears to be in practically perfect mechanical condition, and they will undoubtedly outlast the hull.

The De Laval Steam Turbine Company stands ready to guarantee marine turbines with double reduction gears to give absolutely satisfactory mechanical operation, with the additional advantages of saving in first cost and weight over single geared units. Higher efficiency is obtained because of the superior turbine design made possible by the use of double reduction gears and the most favorable propeller speeds can be used.

The "MUNARGO" performance affords ample proof of the correct design and satisfactory operation of De Laval double reduction gears, which are characterized by—

1—Rugged construction.
2—Moderate tooth pressures.
3—Accurate gear cutting.

De Laval
Steam Turbine Co., Trenton, N.J.



2025

PUMPS—Continued
Great Lakes Engineering Works, River Rouge, Mich.
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS (Ballast)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.

PUMPS (Bilge)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.

PUMPS (Boiler Feed)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.

PUMPS (Direct Acting)
Dean Brothers Co.. 323 W. 10th St., Indianapolis, Ind.

PUMPS (Fuel Oil)
Coen Co., Inc., 610 S. Broadway, Los Angeles, Cal.

PUMPS (Power)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.

PUMPS (Steam)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.

PUMPS (Vacuum)
Dean Brothers Co., 323 W. 10th St., Indianapolis, Ind.

PURIFICATION SYSTEMS—See WATER PURIFICATION SYSTEMS

RADIO COMPASS AND DIRECTION FINDER
Radiomarine Corp. of America, 66 Broad St., New York City.

RADIO EQUIPMENT
Radiomarine Corp. of America, 66 Broad St., New York City.

RAFTS
Lane, C. M., Lifeboat Co., Inc., 856 Humboldt St., Brooklyn, N. Y.

RANGES
Stamford Foundry Co., Stamford, Conn.

REFRIGERATING MACHINERY
Brunswick-Kroeschell Co., New Brunswick, N. J.
Ingersoll-Rand Co., 11 Broadway, New York City

REPAIRS
Maryland Dry Dock Co., Baltimore, Md.

REPAIRS (Electric)
Westinghouse Electric & Mfg. Co., S. Philadelphia, Pa.

REPAIRS (Marine)
American Shipbuilding Co., Foot of W. 54th St., Cleveland.
Bath Iron Works Corp., Bath, Me.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Canada Steamship Lines, P. O. 2435, Montreal, Can.
Chicago Shipbuilding Co., So. Chicago, Ill.
Collingwood Shipyards, Inc., Collingwood, Ont., Canada.
Great Lakes Engineering Works, River Rouge, Mich.
Manitowoc Ship Building Corp., Manitowoc, Wis.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway, New York City.
New York Shipbuilding Co., Camden, N. J.
Sun Shipbuilding & Dry Dock Co., Chester, Pa.
Todd Shipyards Corp., 25 Broadway, New York City.
Toledo Shipbuilding Co., Toledo, O.
United Dry Docks, Inc., 11 Broadway, New York City

REPAIRS (Marine Engine)
Collingwood Shipyards, Inc., Collingwood, Ont., Canada.
Electric Boat Co.-New London Ship & Engine Works, 247 Park Ave., New York City.

REPAIRS (Turbine)
Westinghouse Electric & Mfg. Co., S. Philadelphia, Pa.

REVOLUTION COUNTERS
Cummings Machine Works, 255 Atlantic Ave., Boston, Mass.
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

ROPE (Manila, Net, Sisal, and Other Hard Fiber Cordage)
Columbian Rope Co., Auburn, N. Y.
Samson Cordage Works, Boston.
Whitlock Cordage Co., 46 South St., New York City.

ROPE (Transmission)
Columbian Rope Co., Auburn, N. Y.

ROPE OAKUM
Stratford, George, Oakum Co., Jersey City, N. J.

RUBBER TILE
Selby, Battersby & Co., 33rd & Arch Sts., Philadelphia.

RUST PREVENTATIVE (Oil)
Vacuum Oil Co., 61 Broadway, New York City.

SAFETY VALVES (Marine)
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.

SCHOONERS (Auxiliary)
American Shipbuilding Co., Foot of W. 54th St., Cleveland.
Toledo Shipbuilding Co., Toledo, O.

SEARCHLIGHTS (High Intensity)
Sperry Gyroscope Co., The, Brooklyn, N. Y.

SEARCHLIGHTS (Incandescent and Arc)
General Electric Co., Schenectady, N. Y.
Sperry Gyroscope Co., The, Brooklyn, N. Y.

SELF UNLOADING EQUIPMENT
Smith, Leathem D., Dock Co., Sturgeon Bay, Wis.

SEPARATORS (Oil)
Babcock & Wilcox Co., 85 Liberty St., New York City.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.

SHEETS (Blue Annealed)
Alan Wood Steel Co., Conshohocken, Pa.

SHIPBUILDERS
American Shipbuilding Co., Foot of W. 54th St., Cleveland.
Bath Iron Works Corp., Bath, Me.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Canada Steamship Lines, P. O. Box 2430, Montreal, Can.
Collingwood Shipyards, Inc., Collingwood, Ont., Canada.
Great Lakes Engineering Works, River Rouge, Mich
Manitowoc Ship Building Corp., Manitowoc, Wis.
Maryland Dry Dock Co., Baltimore, Md.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway, New York City.
New York Shipbuilding Co., Camden, N. J.
Smith, Leathem D., Dock Co., Sturgeon Bay, Wis.
Sun Shipbuilding & Dry Dock Co., Chester, Pa.
Todd Shipyards Corp., 25 Broadway, New York City.
Toledo Shipbuilding Co., Toledo, O.
United Dry Docks, Inc., 11 Broadway, New York City.

SHIPBUILDING SYSTEMS
Isherwood, J. W., & Co., Ltd., 17 Battery Place, New York City.

SHIP STABILIZERS
Sperry Gyroscope Co., The, Brooklyn, N. Y.

SIGNALS (Submarine)
Submarine Signal Co., 160 State St., Boston, Mass.

SOUNDING MACHINES
Submarine Signal Co., 160 State St., Boston, Mass.

SPRINGS (Box, Bed)
Simmons Co., The, 666 Lake Shore Drive, Chicago, Ill.

SPUN OAKUM
Stratford, George, Oakum Co., Jersey City, N. J.

STEAMSHIP LINES (Passenger and Freight)
Hamburg-American Lines, 39 Broadway, New York City.

STEAM GAGES
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.

STEAM TRAPS
Davis Engineering Co., 90 West St., New York City.

STEEL BARGES—See BARGES (Steel)

STEEL TANKS
Brunswick-Kroeschell Co., New Brunswick, N. J.

STEERING ENGINES
Hyde Windlass Co., Bath, Me.

STEERING GEARS
American Shipbuilding Co., Foot of W. 54th St., Cleveland.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Hyde Windlass Co., Bath, Me.

STOKERS
Babcock & Wilcox Co., The, 85 Liberty St., New York City.

STORAGE BATTERIES—See BATTERIES

STOVES
Stamford Foundry Co., Stamford, Conn.

STRAINERS (Oil)
Coen Co., Inc., 610 S. Broadway, Los Angeles, Cal.

SUPERHEATERS
Babcock & Wilcox Co., The, 85 Liberty St., New York City.

SWITCHBOARDS
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., S. Philadelphia, Pa.

TELEMOTORS
Hyde Windlass Co., Bath, Me.

TORSION METERS
Cummings Machine Works, 255 Atlantic Ave., Boston, Mass.

TOWING
Moran Towing & Transportation Co. 17 Battery Place, New York City.

TOWING LINES
Columbian Rope Co., Auburn, N. Y.
Whitlock Cordage Co., 46 South St., New York City.

TRACTORS
Clark Tructractor Co., Battle Creek, Mich.
Elwell-Parker Electric Co., The, 4205 St. Clair Ave., Cleveland, O.

TRANSMISSION (Rope)—See ROPE (Transmission)

TREADS (Steel Stair & Ladder)
Alan Wood Steel Co., Conshohocken, Pa.

TRUCKS
Clark Tructractor Co., Battle Creek, Mich.
Elwell-Parker Electric Co., The, 4205 St. Clair Ave., Cleveland, O.

TRUCKS (Dump)
Clark Tructractor Co., Battle Creek, Mich.

TURBINES (Electric)
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., So. Philadelphia, Pa.

TURBINES (Marine)
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway, New York City.
Westinghouse Electric & Mfg. Co., So. Philadelphia, Pa.

TURBINES (Steam)
DeLaval Steam Turbine Co., Trenton, N. J.
Newport News Shipbuilding & Dry Dock Co., 233 Broadway, New York City.
Sturtevant, B. F., Co., Hyde Park, Boston, Mass.
Westinghouse Electric & Mfg. Co., So. Philadelphia, Pa.

TWINE AND ROPE
Columbian Rope Co., Auburn, N. Y.
Samson Cordage Works, Boston.
Whitlock Cordage Co., 46 South St., New York City.

VENTILATING EQUIPMENT
Sturtevant, B. F., Co., Hyde Park, Boston, Mass.

WATER PURIFICATION SYSTEMS
Griscom-Russell Co., 285 Madison Ave., New York City.

WELDERS (Electric Arc)
Westinghouse Electric & Mfg. Co., S. Philadelphia, Pa.

WELDING & CUTTING APPARATUS (Oxy, Acetylene, Oxy-Gas)
Oxweld Acetylene Co., The, 30 E. 42nd St., New York City

WELDING GAS
Prestolite Co., The, Inc., 30 E. 42nd St., New York City

WELDING SUPPLIES
Oxweld Acetylene Co., The, 30 E. 42nd St., New York City

WHISTLES
Star Brass Mfg. Co., 53 Oliver St., Boston, Mass.

WINCHES
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Dake Engine Co., Grand Haven, Mich.
Hyde Windlass Co., Bath, Me.

WINDLASSES
American Shipbuilding Co., Foot of W. 54th St., Cleveland.
Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa.
Dake Engine Co., Grand Haven, Mich.
Hyde Windlass Co., Bath, Me.

WIRELESS MESSAGE SERVICE
Radiomarine Corp. of America, 66 Broad St., New York City.

WIRELESS SETS AND APPARATUS
Radiomarine Corp. of America, 66 Broad St., New York City.

WORKBOATS
Lane, C. M., Lifeboat Co., Inc., 856 Humboldt St., Brooklyn.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

Seeking a Steamship Office in Philadelphia?—*Here it is!*

GROUND FLOOR—N. W. COR. 15TH AND LOCUST STREETS

Opposite White Star Line, Canadian Pacific, Bartlett Tours, Frank Tourist Co. and surrounded by other prominent steamship offices. An attractive office—at a moderate rental.

ALBERT M. GREENFIELD & CO.
Walnut & Juniper Sts. Philadelphia.

Propeller Wheels and Blades
to fit any hub.
Sheriffs Manufacturing Co.
Established 1854
Milwaukee, Wis.

Oldman-Magee Boiler Works, Inc.
Boilers, Tanks, Stacks, Structural Work and Castings
Boiler Repairing Promptly Attended to Day or Night
MARINE WORK A SPECIALTY ELECTRIC WELDING
Works: 36-40 Illinois Street - BUFFALO, N. Y.

Kelvin & Wilfrid O. White Co.
112 State Street, Boston
Ship Compasses
Navigational Equipment
Contracts a Specialty
New York and Montreal

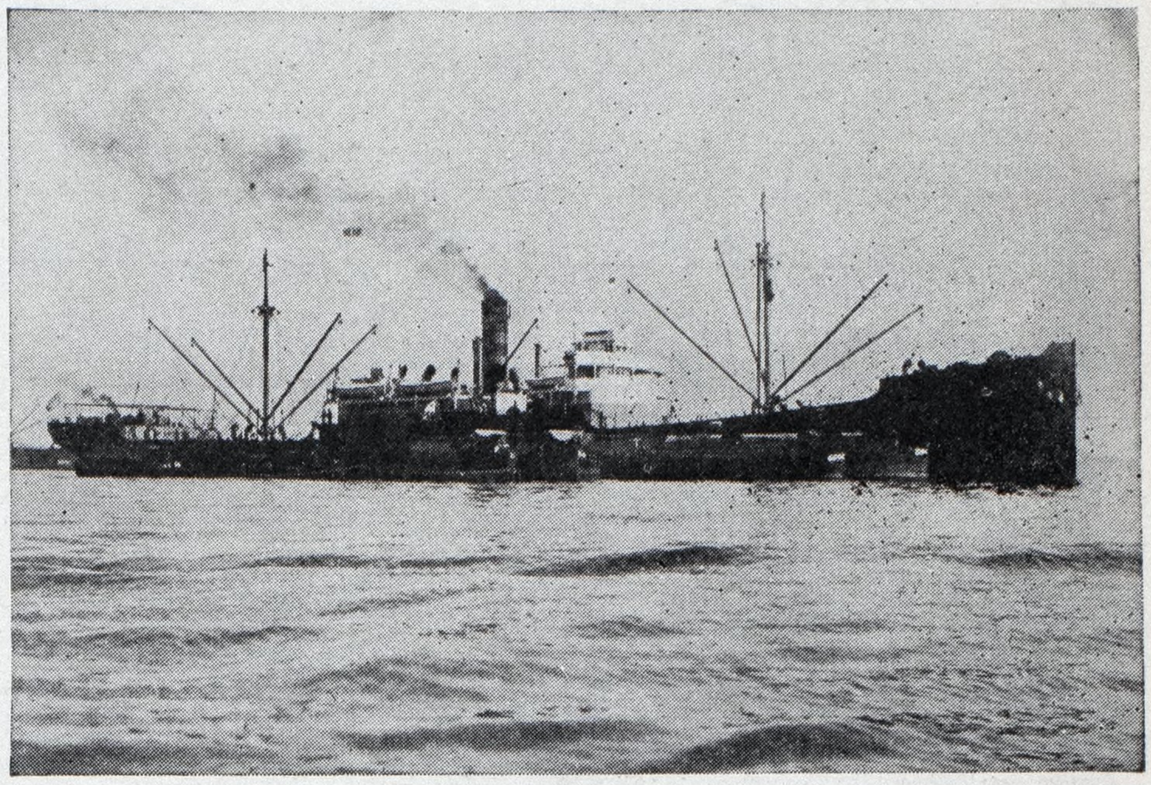
ANDREW J. MORSE & SON, Inc.
221 High Street BOSTON, MASS.
Established 1837
Diving Apparatus and Submarine Armor
Fire Protection Equipment
The Invincible Nozzle
Catalogues on request

THE MULHOLLAND HATCH-FASTENER COMPANY
Marion Building, Main 0272 Cleveland, Ohio
Manufacturers of the Mulholland Simplex and Security Hatch Fasteners.
For Ocean and Lake Trade
OVER 225,000 SETS NOW IN USE ON THE GREAT LAKES

Edward P. Farley & Co.
Incorporated
Steamship Owners, Agents and Brokers
11 Broadway—New York

John J. Boland Adam E. Cornelius
BOLAND & CORNELIUS
VESSEL OWNERS AND BROKERS
Marine Insurance Agents
Marine Trust Building BUFFALO, N. Y.

Transportation Tilts the Balance of Trade



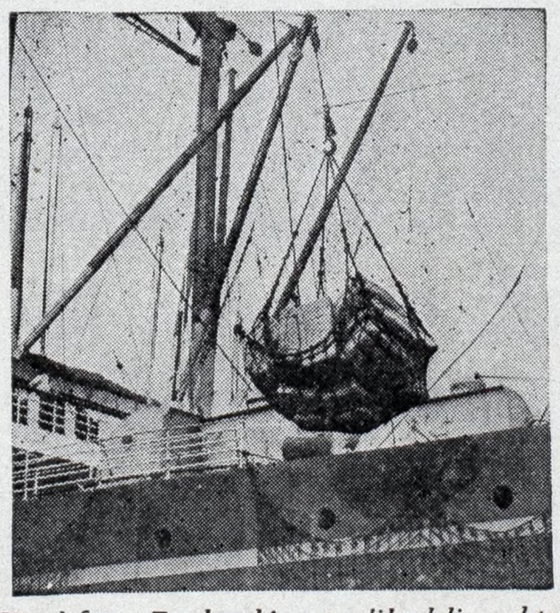
American Flag vessel discharging general cargo at Rio de Janeiro

OUR Nation's present and future prosperity depends largely upon our foreign commerce. And it is an economic law that trade inevitably flows to the country controlling transportation.

Efficient, economical trans-oceanic service is offered by the 16 lines owned by the United States Shipping Board, and the many lines developed by it but now under private ownership. Their hundreds of speedy cargo vessels sail promptly, regularly, from every American port. There is no port in the world they do not touch. Their capacity for increasing business is limited only by the use shippers make of them.

Whether or not you are now shipping abroad, the advice of these experienced operators is worth seeking. Write for full information.

★ ★ ★



Wool from England!—speedily delivered to American Importers by one of the ships of the 16 lines listed here.

*AMERICA FRANCE LINE
*AMERICAN BRAZIL LINE
*AMERICAN DIAMOND LINES
DIXIE UK LINE
*AMERICAN PIONEER LINE
DIXIE MEDITERRANEAN LINE
MISSISSIPPI VALLEY EUROPEAN LINE
YANKEE LINE
MOBILE OCEANIC LINE
AMERICAN GULF ORIENT LINE
AMERICAN REPUBLICS LINE
ORIOLE LINES
SOUTHERN STATES LINE
TEXAS MEDITERRANEAN LINE
TEXAS UKAY LINE
TEXAS STAR LINE

**Accommodations available for a limited number of passengers on these lines*

UNITED STATES SHIPPING BOARD MERCHANT FLEET CORPORATION

WASHINGTON, D.C.

Classified Advertisements

For Sale and Miscellaneous—Help and Positions Wanted

For Sale and Miscellaneous Advertisements
10c per word—minimum advertisement—$3.00

Six words must be added for box address.

To insure insertion, advertisements must reach us by the 10th of the month.

Help Wanted Advertisements
6c per word—minimum advertisement—$3.00

Position Wanted Advertisements
4c per word—minimum advertisement—$1.00

Please have remittance accompany order.

Wanted

WANTED: A TRIPLE EXPANSION ENGINE in first class condition, high pressure cylinder to be 14", 15", 16", or 17", stroke about 24" to 30". Also a marine fire box, or Scotch boiler, allowed about 200 lbs. steam pressure to furnish steam for an engine of about the size described. Duluth-Superior Dredging Co., Duluth, Minnesota.

Position Wanted

WANTED: POSITION AS CHIEF ENGINEER on Yacht, Passenger or Ferry boat. Will go anywhere. Have U. S. license for steam or diesel ships of any tonnage. Have a number of years experience at sea. Also shop experience installing engines. Will furnish best of references, as to ability and character. Write or wire Archie C. Rolfe, 1400 Washington St., Bath, Maine.

For Sale

FOR SALE: TUG "BUNGLE" AT A BARgain price. Address R. G. Evans, Cheboygan, Mich.

For Sale

FOR SALE — STEEL FREIGHTER M. L. Edwards. Built 1922. 64'10" x 22' x 6'6" carries 120 tons, high pressure engine upright. Boiler, Boom and Hoist. Capt. Edwards, 1507 Barry Ave., Chicago, Ill.

FOR SALE—SCHOONER LUCIA SIMPSON 215 tons net. 127 x 28 x 8.7 ft. 12 H.P. boiler, winch and bilge pump. At Sturgeon Bay, Wis. Write Northern Marine Corporation, 835—72nd Ave., Milwaukee, Wis.

FOR SALE OR CHARTER, 60 X 16 X 4 FT. 4 draft, Standard Engine 6 x 8, 6 cyl., Inspected and equipt to carry 125 people. Tows and handles well and is a first class boat, wheel house control, lavatory, running water, Delco Light plant, etc., and is ready to go right now. McLOUTH SHIPYARD, MARINE CITY, MICH.

For Sale

FOR SALE: MARINE ENGINES AND boilers of all sizes; light draft wooden and steel tug boats for sale or charter; derrick boats, deck scows and lighters for sale or charter. Cowles Towing Co., Buffalo. N. Y.

DOUBLE DECK HOUSE BOAT FLOATING at Alicia, Pa. Hull: frame 26' wide, 4'4" deep, 100' long; Fir wood, Partitions and ceilings T & G. Wired for electric lights. Composition roof. Good condition. Details on application. Monessen Coal & Coke Co., P. O. Box 72, Pittsburgh, Pa.

FOR SALE OR CHARTER, 42" x 12'6" x 4 all steel Cabin boat; can be used for supply boat or light towing. Two 35 H.P. Fairbanks-Morse Diesel engines one man control. Frank Becker, 5032 Vinewood, Detroit, Mich.

FOR SALE—AMERICAN STEAMER JOS. W. Simpson. Composite; Full Welland Canal size; Exceptionally large hatches; clear holds; grain classed; fitted with McMyler 15 ton crane; Ideal boat for general cargoes; has had no lost time during last two years of excessive depression in steamship business. Large boat required only reason for selling. Price and particulars on request. Apply Madden Coal Corporation, Ogdensburg, N. Y.

TO OUR SUBSCRIBERS

The classified section of MARINE REVIEW is for your convenience—its value is proving very worthwhile to everyone who uses it to buy and sell.

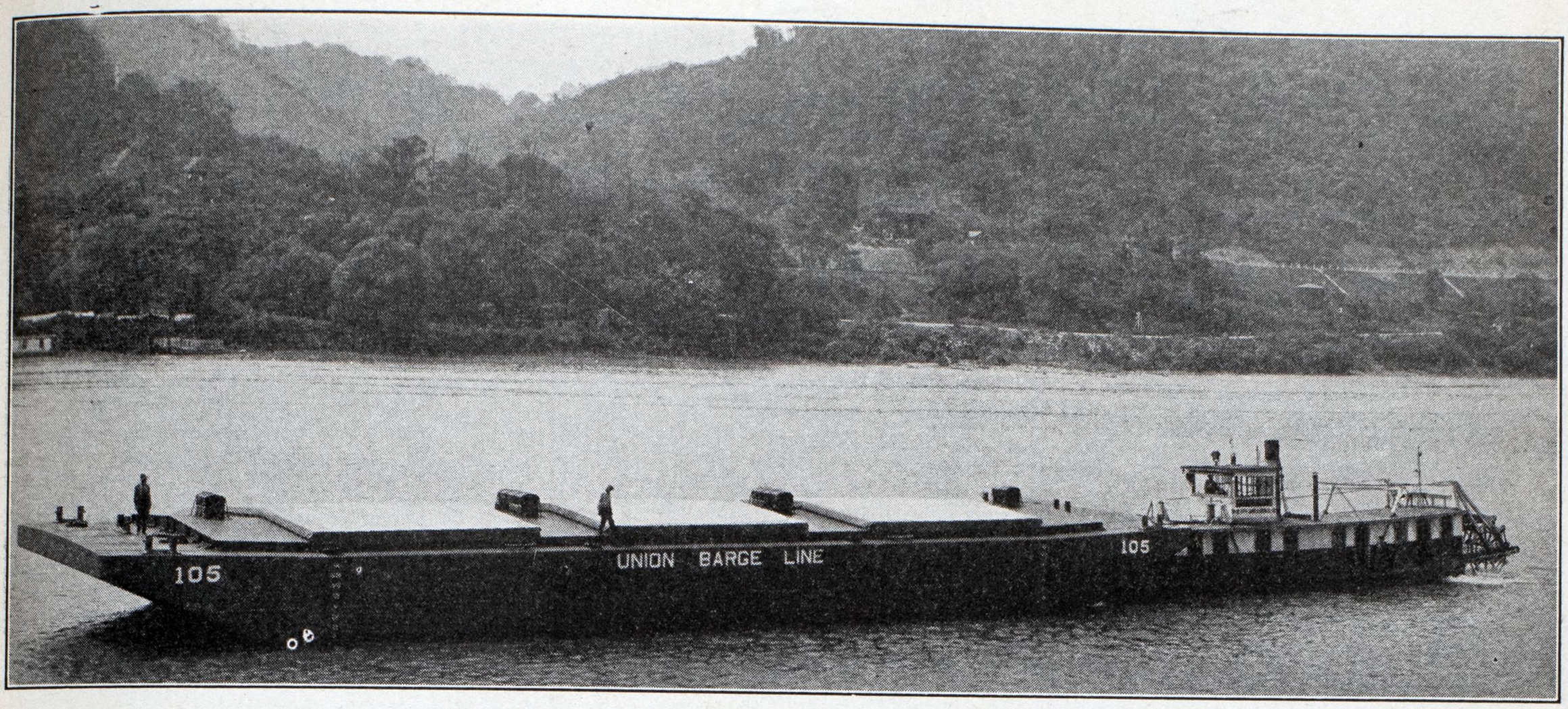
If you want to buy or sell ships or marine equipment—need a man for your organization—make it known to the entire marine industry through the use of classified advertising in MARINE REVIEW.

Mail copy for your advertisement in the November issue today, so it reaches us before October 20.

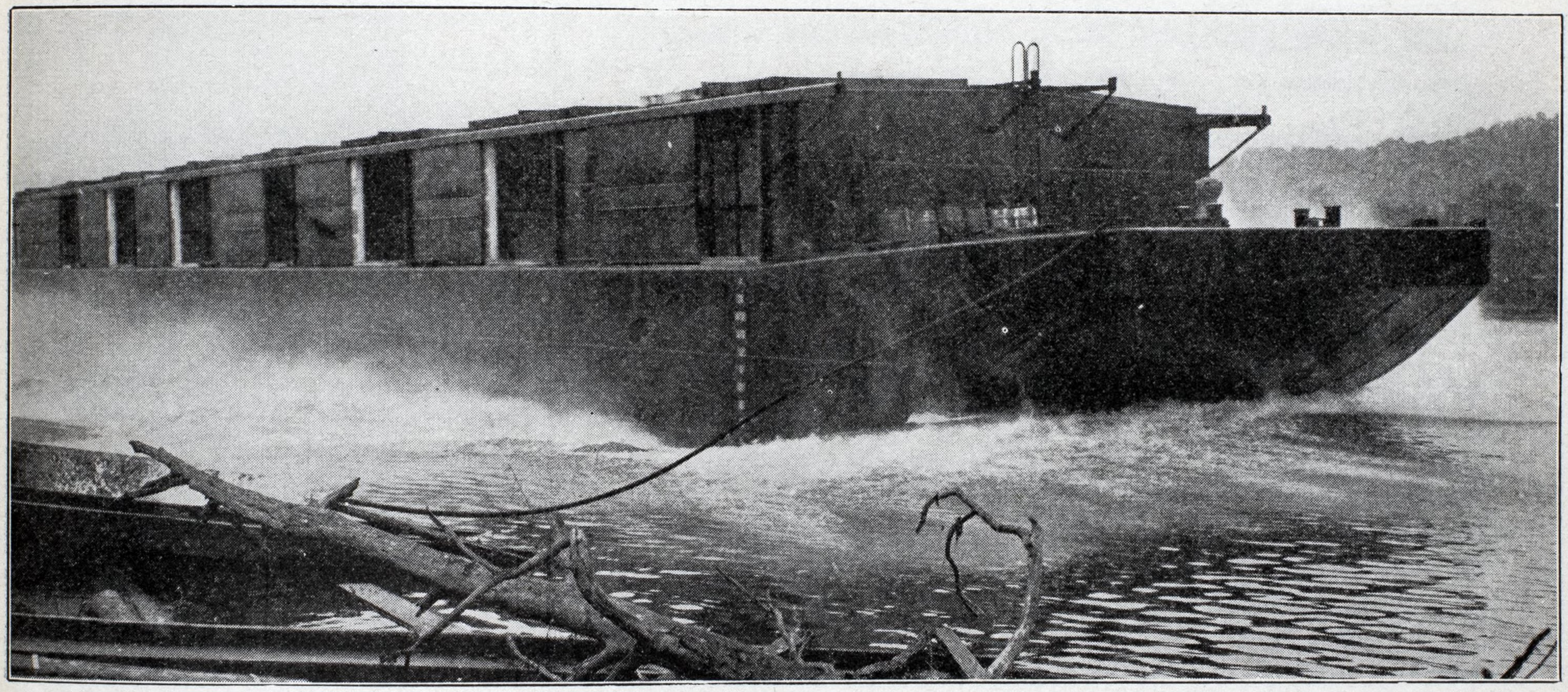
DESIGNERS and BUILDERS of

1903 STEEL BARGES 1930

For Twenty-Seven Years



Steel Barge (Covered) for Union Barge Line



Launching of Steel Barge for Inland Waterways, 1929

AMERICAN BRIDGE COMPANY

Subsidiary of United States Steel Corporation

MANUFACTURERS OF STEEL STRUCTURES

of all classes

BRIDGES — BUILDINGS — BARGES

Girders, Roof Trusses, Poles, etc.

Contracting Offices in principal cities

General Offices
71 Broadway
New York, N. Y.

Marine Department
Frick Building
Pittsburgh, Pa.

Index To Advertisers

Alan Wood Steel Co. 77
Almy Water Tube Boiler Co. . . 72
American Bridge Co. 89
American Ship Building Co. . . 6, 7
Associated Business Papers, Inc. 12

Babcock & Wilcox Co. 17
Bath Iron Works Corp. 80
Bethlehem Shipbuilding Corp. Ltd. 9
Boland & Cornelius 87
Brunswick-Kroeschell Co. 83
Busch - Sulzer Bros. Diesel Engine Co. 3

Canada Steamship Lines 83
Carnegie Steel Company 81
Clark Tructractor Co. 65
Coen Co., Inc. . . . . Front Cover
Collingwood Shipyards, Ltd. . . 71
Columbian Rope Co. 16
Cooper-Bessemer Corp., The . . 91
Cummings Machine Works . . . 78
Cutler-Hammer, Inc. 70

Dake Engine Co. 72
Davis Engineering Corporation 85
Dean Brothers Co. 78
De Laval Steam Turbine Co. 85
Dixon, Joseph, Crucible Co. . . 80

Electric Boat Co.-New London Ship & Engine Wks. 61
Electric Storage Battery Co. . . 69
Elwell-Parker Electric Co., The 67

Fairbanks-Morse Co. 75, 76
Farley, Edward P., & Co., Inc. 87
Federal Shipbuilding & Dry Dock Co. 10

General Electric Co. 14
Great Lakes Engineering Wks. 18
Greenfield, Albert M., & Co. . . 87
Griscom-Russell Co., The 77

Hamburg-American Line 79
Haydenville Co., The 81
Hyde Windlass Co. . . . . Back Cover

Ingersoll-Rand Co. 8
Isherwood, Sir Joseph W., & Co., Ltd. 83

Kelvin & Wilfrid O. White Co. 87

Lane, C. M., Lifeboat Co., Inc. 79
Linde Air Products Co. 11

Manitowoc Shipbuilding Corp. 79
Maryland Dry Dock Co. 79
Moran Towing & Transportation Co., Inc. . . . 63
Morse, Andrew J., & Son, Inc. 87
Mulholland Hatch - Fastener Co. 87

Newport News Shipbuilding & Dry Dock Co. Inside Back Cover
New York Shipbuilding Co. . . . 15

Oldman-Magee Boiler Works, Inc. 87
Oxweld Acetylene Co. 11

Prest-O-Lite Co., Inc. 11

Ritchie, E. S., & Sons 77

Samson Cordage Works 81
Sheriffs Manufacturing Co. . . . 87
Smith, Leathem D., Dock Co. 72
Stamford Foundry Co. 78
Standard Oil Co. of New Jersey 72
Star Brass Mfg. Co. 85
Stratford, George, Oakum Co. 81
Sturtevant, B. F., Co. . . Back Cover
Submarine Signal Co. 78
Sun Shipbuilding & Dry Dock Co. . . . . Inside Front Cover

Toledo Shipbuilding Co., Inc. 13

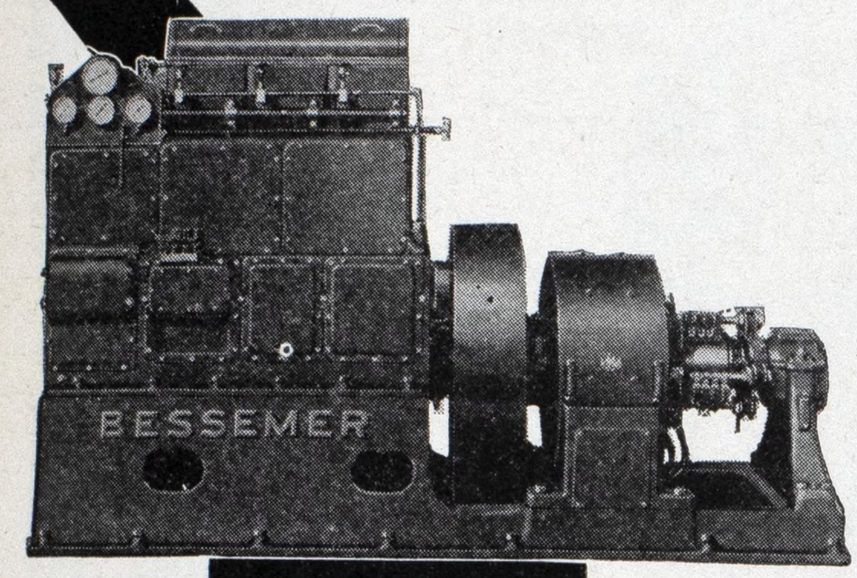
Union Carbide and Carbon Corp. 11
United Dry Docks, Inc. 73
United States Shipping Board Merchant Fleet Corporation 87

Vacuum Oil Co. . . . . .

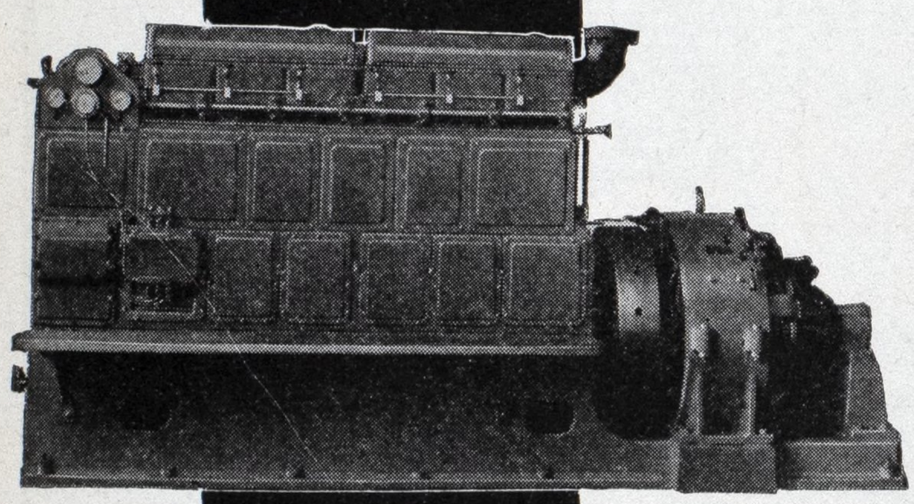
Westinghouse Air Brake Co. 74
Westinghouse Electric & Manufacturing Co. 92
White, Kelvin & Wilfrid O., Co. 87
Whitlock Cordage Co. 80

CHOOSE YOUR AUXILIARY *POWER*

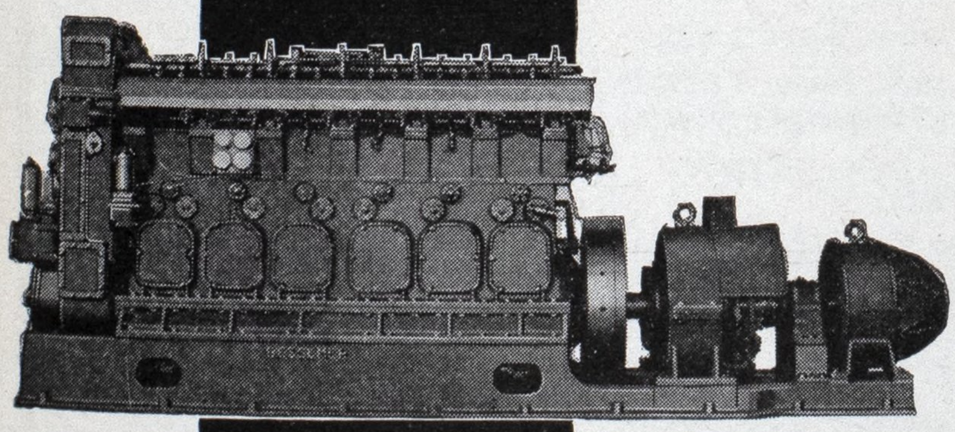
as carefully as your main power



A 3-CYLINDER 50 K.W. DIESEL AUXILIARY GENERATING SET



A 6-CYLINDER 100 K. W. DIESEL AUXILIARY GENERATING SET



A 6-CYLINDER 150 K. W. GENERATING SET FOR DIESEL ELECTRIC DRIVE

THE performance, economy and reliability of marine auxiliary power units are relatively as important as the main engines—and they should be chosen with the same degree of care.

With Cooper-Bessemer Diesel auxiliaries you are assured of the same smooth performance, the same economy of operation and maintenance and the same reliability that has so long characterized Cooper-Bessemer main engines in all types of commercial vessels.

There is a Cooper-Bessemer Diesel auxiliary generating set of a size and type for practically every marine need—from the small 3 cyl. 50 K.W. generating set to the large 8 cyl. 1,000 K.W. units. Each is built to the highest standard both in materials and workmanship and each has been thoroughly proved by performance in marine service.

Before selecting your auxiliary power equipment be sure to investigate Cooper-Bessemers. Our engineers will be glad to consult with you on your particular auxiliary power needs.

The COOPER-BESSEMER CORPORATION

General Diesel Sales Offices: Suite 301, 25 West 43rd St., New York City

Plants: Grove City, Pa.—Mt. Vernon, Ohio

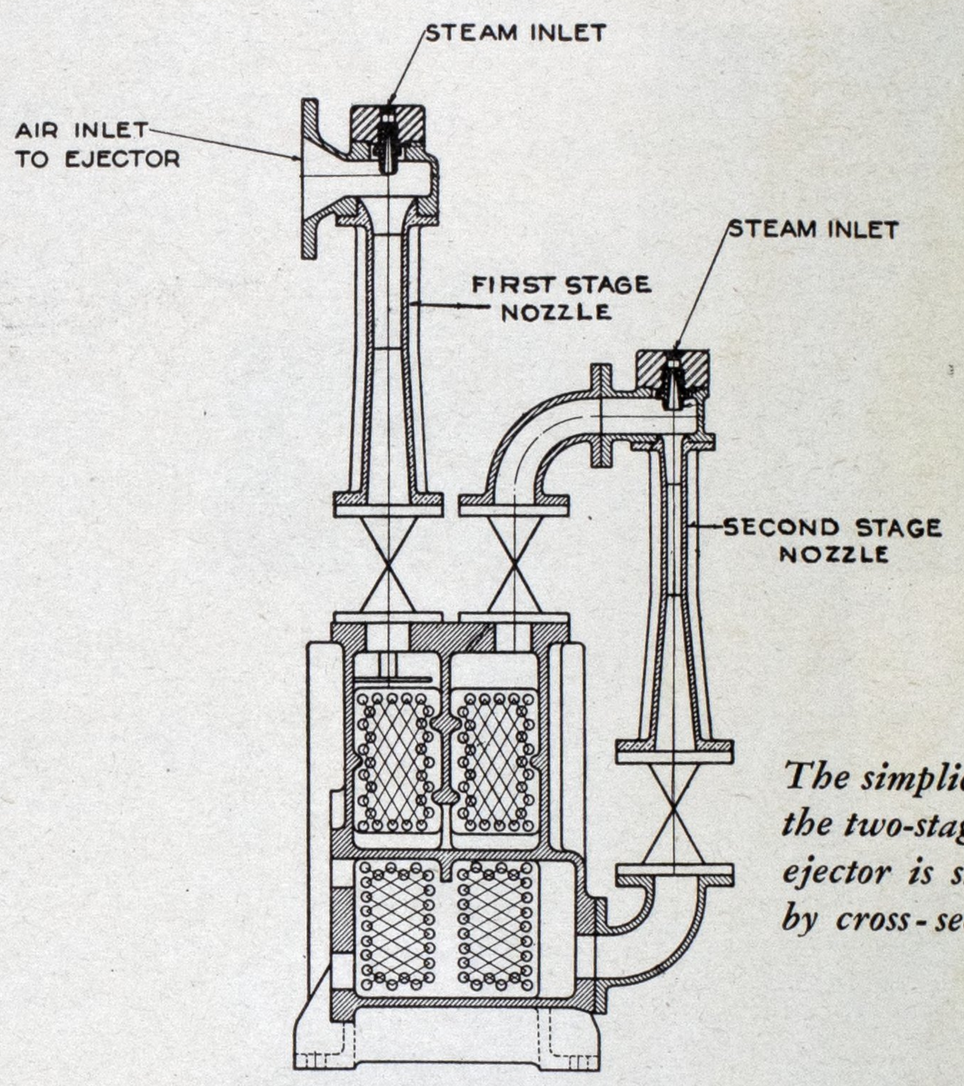
Canadian Diesel Representative: Diesel Power Ltd., 129 Adelaide St., West, Toronto, Ont., Canada

As Simple as a Pipe Fitting

. . . NO MOVING PARTS

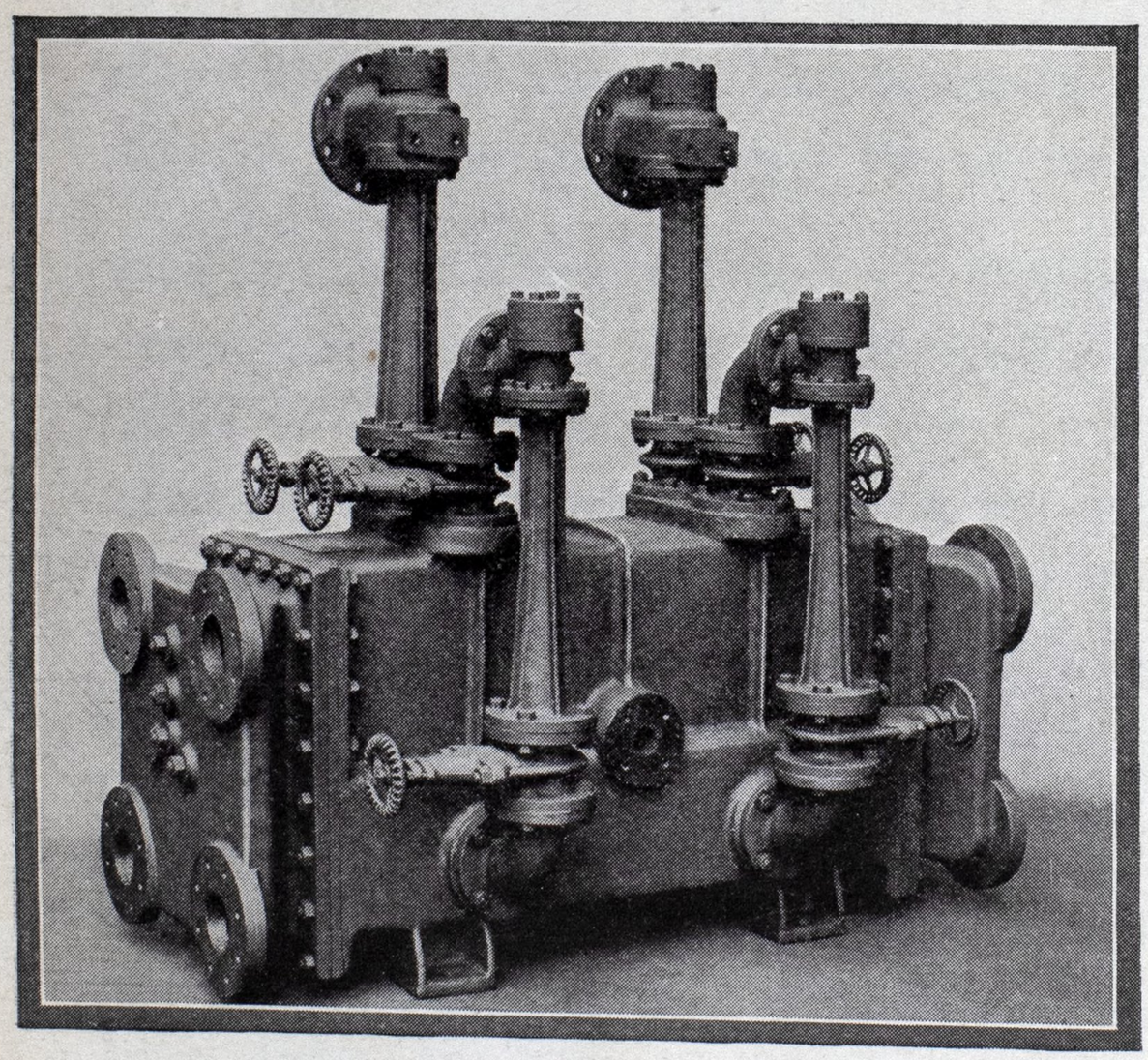
AN outstanding contribution to marine engineering is the steam-jet air ejector which was pioneered in America by George Westinghouse in 1907—prior to his development of the marine geared turbine.

Subsequent development and refinements have made the Westinghouse Marine Air Ejector today the recognized standard for merchant and naval vessels. Because of its simplicity and reliability,



The simplicity of the two-stage air ejector is shown by cross-section.

it is rapidly supplanting the reciprocating air pump and has been adopted for use in every type and size of ship.



Two banks of two-stage air ejectors mounted on intermediate and after condensers.

Among recent orders for Westinghouse Air Ejectors to serve main and auxiliary condensers are the following vessels:

Two new Dollar Liners
Two new Matson Liners
Two new Ward Liners
One new New York-Porto Rico Passenger Vessel
Four new Export Line Vessels
Three Inter-Island Navigation Company Vessels
Two new Standard Unit Navigation Company Towboats
Three New York Harbor Tugs
Nine Coast Guard Cutters
Five new Scout Cruisers
One geared-turbine Suction Dredge

Service, prompt and efficient, in all principal American ports

Westinghouse

WESTINGHOUSE ELECTRIC

T 31511

TUNE IN THE WESTINGHOUSE SALUTE OVER THE N. B. C. NATION-WIDE NETWORK EVERY TUESDAY EVENING.

Quality at NEWPORT NEWS

No job is good enough in the yards at NEWPORT NEWS as long as there is possibility of improvement.

Initiative and pride in workmanship are encouraged to the point where everyone contributing to the design and construction of ships BUILT AT NEWPORT NEWS follows with keen interest their performance for many years after they are completed.

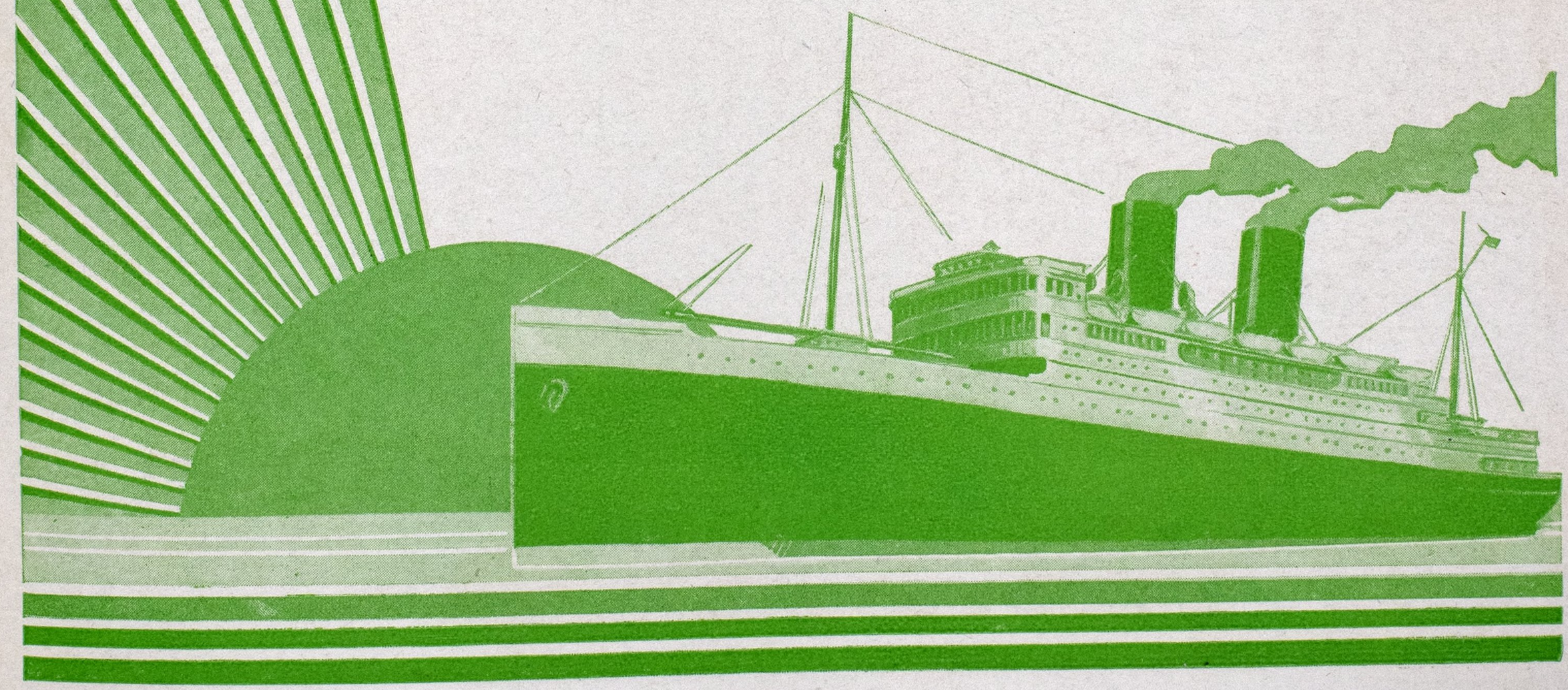
NEWPORT NEWS has always built good ships.

It is the sincere endeavor of every member of a highly efficient and skilled organization to set the highest standards of design and workmanship—to give the client the best that can be produced with the aid of proper shipbuilding facilities and scientific scheduling methods—in short, to produce better ships.

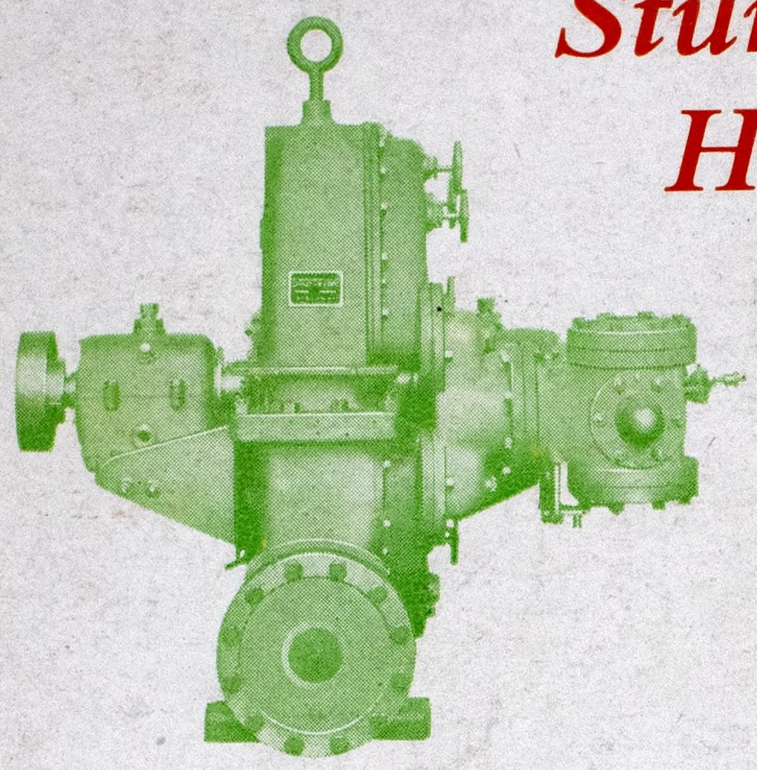
"SHIPS OF CHARACTER"

Newport News Shipbuilding and Dry Dock Company

Newport News, Va. 233 Broadway, New York City



Sturtevant Turbines Have Many Auxiliary Uses



Specializing in auxiliary service, Sturtevant Turbines provide a driving unit that is especially adapted to Marine work. They are used extensively for driving fire and flushing pumps, forced and induced draft fans, and generators.

The nozzles can be individually controlled—automatically or by hand—providing accurate adjustment for various loads and speeds. The wide speed and load range is a decided advantage.

All this means efficiency . . . economy . . . satisfaction—three outstanding characteristics of Sturtevant engineering. Have our Marine Department give you the details on Sturtevant Turbines.

B. F. STURTEVANT COMPANY, HYDE PARK, BOSTON, MASS.

Sales Engineering Offices in Principal Cities

Sturtevant REG. U. S. PAT. OFF.

Marine Equipment

Heating and Ventilating Equipment—
Mechanical Draft Equipment—Turbines—Motors—Blowers—
Ventilating Sets—Heaters—Generating Sets—Exhausters
Gasoline and Steam Engines

If You Want The Best Specify

Hyde

S. S. "A. F. HARVEY" owned by Pittsburgh Steamship Co. and built by Great Lakes Engineering Works.

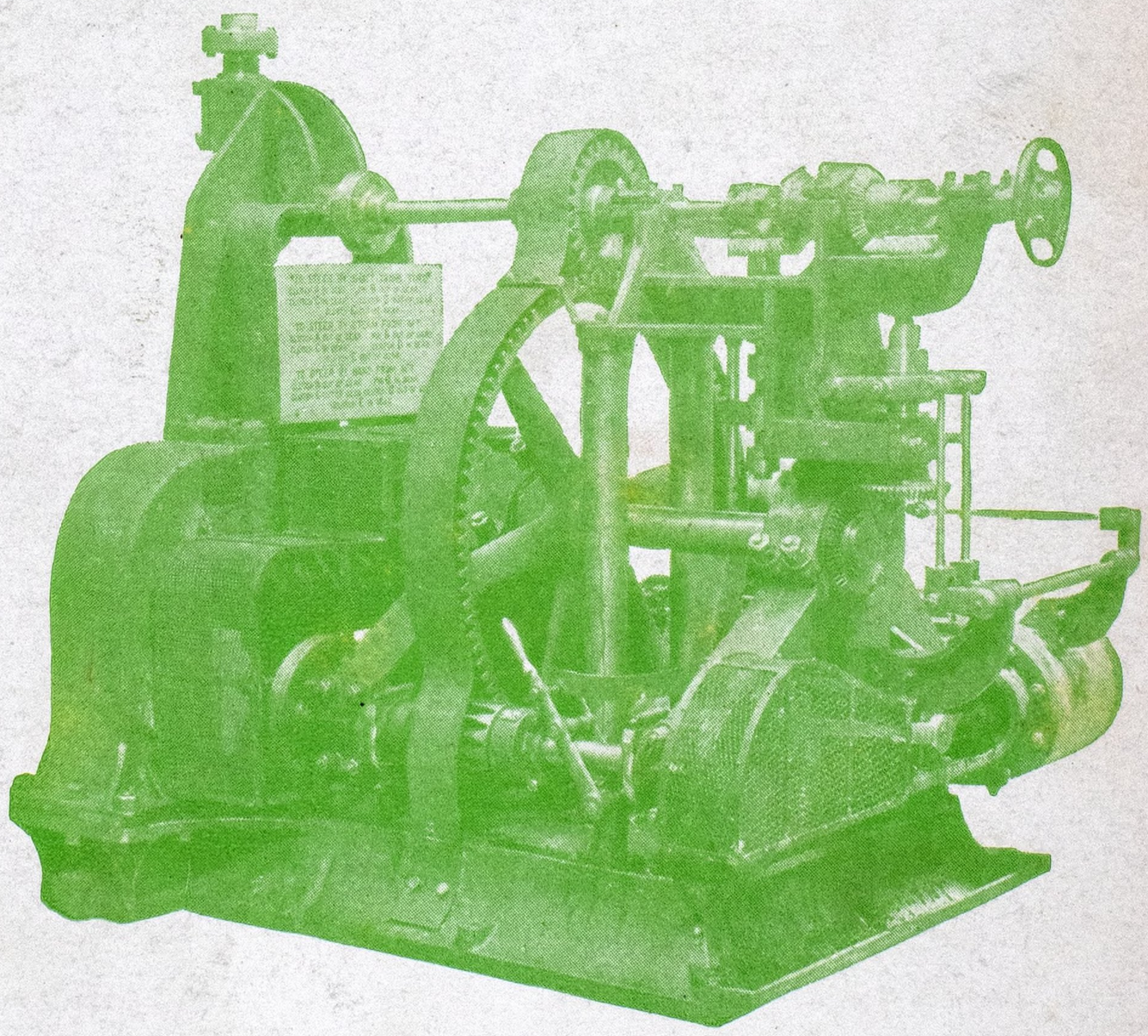
S. S. "B. F. AFFLECK" owned by Pittsburgh Steamship Co. and built by Toledo Shipbuilding Co.

S. S. "S. T. Crapo" owned by Huron Transportation Co. and built by Great Lakes Engineering Works.

These three fine new boats are all equipped with

Hyde

Quadrant Type Steering Gear
Spur Gear Windlass
Mooring Winches
Hatch Winches



HYDE Quadrant Type Steering Gear

Hyde Windlass Company
Bath, Maine